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Improved Attachment to Steam Boilers.

This machine combines in itself the steam gage, water indicator, safety valve regulator, alarm and blow-off, and is designed to fill the place of these appendages. The accompanying article was furnished for publication.

The ordinary spring balances or weighted levers, as regulators for the safety valve, are liable to several objections, which arise from the nature of the spring and the lever as applied to them. The spring balance is too slow to act in case of any sudden or undue generation of steam in the boiler, and consequently always requires the watchful eye of the engineer, in such cases requiring both tripping by the hand and often a lessening of its tension. Should the engineer be called away it will allow an escape of steam long after the pressure has come down to its nominal standard. This is both dangerous and annoying.

The machinery here illustrated not only entirely overcomes these difficulties as a safety-valve regulator but is also a superior pressure gage that will indicate the varying pressure of steam from one pound up to what the regulator is set at, beyond which the pressure cannot get. It is also an accurate and delicete water indicator, showing the varying hights at which the water stands in the boiler. Should the water, through neglect, get very low, it will sound an alarm whistle that cannot fail to attract the engineer's attention. Should the alarm be neglected and the water fall to a dangerously low level it will then allow the steam to escape through the safety valve at a very rapid rate so as to reduce its elastic force immediately, and thus insure the safety of the boiler. The following description, in connection with the illustration will render this device intelligible. It consists of a cylinder, A, fitted with the piston heads, B B′, working steam-tight in the cylinder and made fast with the rod, C, which works through the stuffing box on the top of the cylinder. Steam is admitted through the apertures, D D, from the boiler and the area of the head, B, is greater than that of B′, by as much as the area of the safety valve lessened by the amount the long arm of the safety-valve lever is greater than the short, and the rod, C, is made fast at the top to this lever. This is after making due allowance for the weight operating on the end of the lever of such parts of the regulator as have a gravitating effect on it. The rod, C, is hollow throughout, and is perforated by the apertures, *c c c′ c′*, and is fitted with the collar, C′, which can be operated as a hand screw. The valve, E, is made fast on to the small rod, *e*, and works steam-tight in the hollow rod, C. One end of the spiral spring, F, is made fast to the collar, C′, and the other to the rod, *e*. The upper end of this rod constitutes a rack which operates suitable gear wheels, G, that turn the hand, H, upon the face of the dial, I. When steam is generated in the boiler, and enters by the apertures, D D, it presses downward on the head, B, and contrariwise on the head, B′. Now, if the total lifting power of the safety valve, at the end of its lever be, say 30 lbs., when the pressure in the boiler is 50 lbs. on the square inch, and if the weight of any parts of the regulator acting by gravity on the lever be 5 lbs., and if the total effective area of the head, B, be two square inches, that of the head, B′, must be one and three-quarter inches. The total pressure on the upper head will be 100 lbs., and on the lever 75 lbs., so as to exactly counterbalance the lifting power at the end of the safety-valve lever. The collar, C′, is screwed down on the rod, C, which has a graduated face for its regulation, so far as to prevent the valve, E (on the under side of which the steam is acting, having free access through the apertures, *c c*), from overcoming the power of the spring, F, and clearing the apertures, *c′ c′*, until the steam has got up to 51 lbs., when the valve will rise above the apertures, *c′ c′*, and steam from above the head, B, will escape into the air. This will prevent the total pressure on the head, B, from exceeding one hundred lbs., while that on the head, B′, becomes 76½ lbs., which has an effect on the safety valve the same as if the ordinary spring balance were suddenly reduced in tension by two pounds—and so on for every one pound increase of pressure on the boiler, this regulator allowing an accelerating escape of steam through the safety valve. This action is exactly reversed as the steam comes down to its normal pressure. It is easy to see that as the pressure in the boiler varies, the valve, E, acting under the control of the spring, F, will be moving up or down, thus acting through the gear wheels, G G, on the index hand, H.

Fig. 1

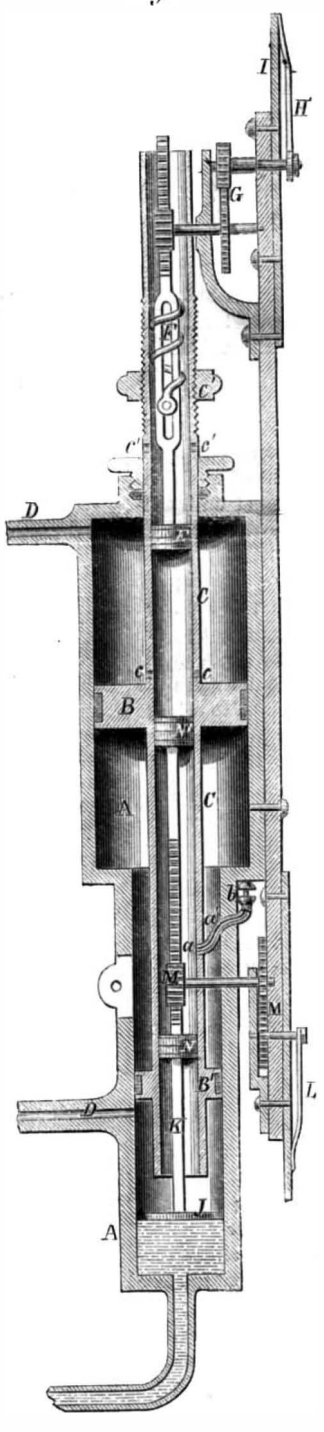

Fig. 2

RIORDAN'S ATTACHMENT TO BOILERS.

The cylinder, A, is fixed on the boiler so that when the water stands at the proper hight in the boiler it will stand at a certain hight in the lower part of the cylinder, A. In this is fitted the float, J, made fast on the rod, K, and having a rack on it acting on the index, L, through the gearing, M M; and the rod K, is provided with stuffings or packing, N N′. Now, when the water stands at the proper hight in the boiler, the stuffings, N N′, will prevent any escape of steam, but when the water gets low the float, bringing down the rod and stuffings, on the upper one, N′, coming below the aperture, *a*, steam will escape through the flexible pipe, *a′*, and sound the alarm whistle, *b*. Should this not be noticed, on its coming further down, there being slots in the hollow shaft, steam will escape into the air. This steam, coming from above the piston head, B, will have the same effect on the safety valve as if the collar, C′, were set to control a smaller pressure and that the escape were through the apertures, *c′ c′*. This arrangement may appear a little difficult to comprehend at first sight, as the principle of the regulator is entirely novel, but everything is simple in construction, and the whole arrangement will not be liable to get out of order and cannot but prove extremely useful. It is designed on scientific principles and will be found to perform all that is claimed for it in the most reliable manner It will relieve the engineer from incessant watching of innumerable gages, cocks, tubes and balances—which is done

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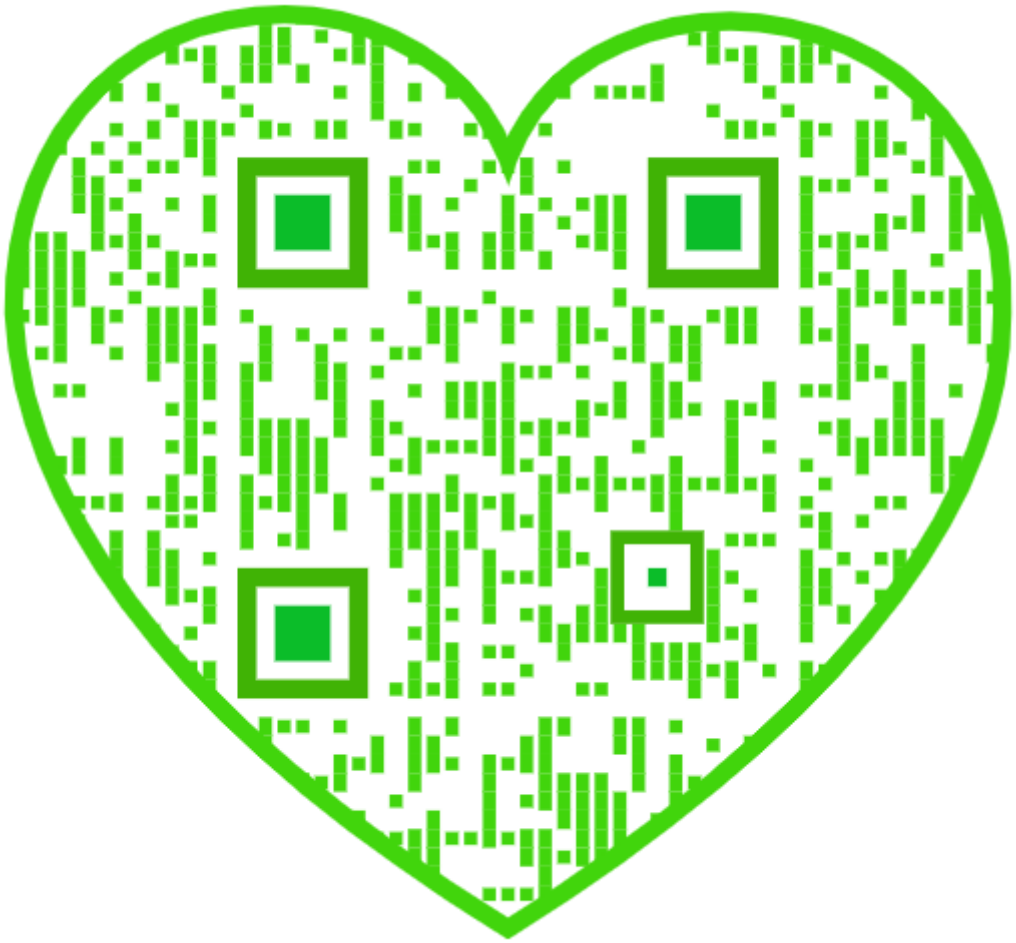

much to the detriment of other parts of the machinery under his care, which often suffers for the want of supervision. The inventor is desirous of introducing it among engineers, and for all further information address him, care of Munn & Co., Washington, D. C.

This machine was patented on January 31, 1865, by Peter Riordan.

Steam Plowing in England.

At a meeting of the Institution of Mechanical Engineers in Birmingham, England, on the 4th of May, a paper on steam plowing was read by Mr. David Greig, of Leeds, giving the results of Mr. Fowler's experience in steam cultivation during the last eight years, in continuation of a previous paper read by him upon the same subject. The difficulties that have been met with in applying steam power to cultivation have arisen from the irregularities in the level of the ground, the changes necessary in the position of the machinery on the ground, the necessity for moving heavy engines where there are no roads, the want of a rope sufficient strength and elasticity, and the different states of the soil from changes of weather. To attach the moving power direct to the implement, as is done in the case of horses, was found not suitable with a steam engine, from the loss of power in moving such a heavy weight over inequalities of the ground, and from the compression caused by its traveling over the soil to be cultivated. Hence the use of a rope driven by the engine became requisite for working the implement. The rope is held up from touching the ground by a number of rope porters or carrying pulleys, mounted on wheels and placed at intervals along the entire course of the rope; those supporting the portion of the rope that is attached to the implement are withdrawn and placed again by boys, each time that the implement passes across the field. The earlier arrangements of leading the rope from a stationary engine, round the corners of the field and along the headlands, or diagonally across the field in a triangular plan, have now been generally superseded by the improved system of direct pull, in which the implement is pulled backwards and forwards across the field by a rope passing across direct from the opposite headland, both the engine and anchor being made to travel slowly along the headlands each time of the course of the implement being reversed. The rope was at first driven by two drums fixed under the engine, being wound up on one drum and unwound off the other alternately. Afterwards the length of the rope was diminished by the use of an endless rope, driven by friction by passing round a grooved driving pulley, instead of being wound on and off a drum; but the different plans first adopted for the purpose of obtaining the necessary adhesion for driving were attended with serious difficulties, from the wear and tear of the rope and the grooves of the driving pulley.

These difficulties have now been effectually surmounted by the valuable contrivance known as the "clip drum," in which a sufficient bite is obtained by only half a turn of the rope round the driving drum. This very ingenious apparatus consists of a series of pairs of jaws or clips, hinged round the circumference of the driving drum close together in a continuous line, forming a complete groove all round the drum. As the rope come in contact with the drum, each pair of clips in succession closes upon it and seizes hold of it, and continues to grip it throughout the half revolution until the rope leaves the drum; the force of grip being in all cases proportionate to the pull of the rope, and such as effectually to prevent slipping. The width of opening of the two rows of clips is adjusted for working with different sizes of ropes, by having one row centered upon the drum itself, while the other row is centered upon a ring, which is screwed upon the body of the drum by a thread chased round its entire circumference; to that by turning round this ring in either direction, the distance between the two rows of clips is simultaneously increased or diminished to exactly the same extent in every pair of clips. A working model of the clip drum was exhibited, and a full size specimen of one of the pairs of clips.

In order to allow for working fields of irregular boundary, the implement is provided with an arrangement of slack gear for taking up the slack of the rope, as the working length of the rope becomes reduced by the narrowing of the boundaries. This consists of a pair of barrels geared together with a relative speed of five to one; so that the pulling rope, in drawing off one foot length of rope from the one barrel, winds up five feet length on the other; and thus all the slack is taken up and the rope drawn tight, before the implement can start to work. For getting heavy engines moved about over ground where no roads exist, the whole of the machinery is made so strong that it cannot be broken by the full steam power. the steam itself being thus the weakest part of the whole machine; and the width of the carrying wheels is increased to such an extent as to ensure carrying the engine over the wettest and softest ground, the width of carrying wheel having been made as much as 2½ ft. in special cases. A pair of engines of smaller size and weight are also used in some instances, placed on the opposite headlands of a field, and both constantly in action, drawing the implement backwards and forwards between them, instead of a single heavy engine at one side of the field with an anchor at the opposite side, as previously described. The first rope used for steam cultivation was made of iron wire; but this was so unsatisfactory, from its softness and want of durability, and also from its great weight and the power consequently absorbed in dragging it, as to check for a time the application of steam power to cultivation. Steel wire was then introduced for the purpose; and in consequence of its great improvements that have been effected in the machinery by which the ropes are driven, and also in the quality of the wire itself, one steel wire rope now lasts for the cultivation of from 2,000 to 4,000 acres, according to the nature of the soil and the width of the implement used. The steel wire rope at present used, of which a specimen was exhibited, is 11-16ths inch diameter, and weight about 2 lbs. per yard, running on an average 9,000 miles under a tension of 25 cwts., and costing about 2½d. per mile run. The difficulties that would arise in working engines and tackle in wet weather, from the sticky condition of some land in a half wet state, particularly clay land, are met by the power that steam gives of performing the work altogether while the land is dry; which is impossible on a clay farm with horse power alone, from the want of sufficient power to break through the hard ground until softened by rain.

For applying steam power to cultivation, the use of rotary implements has been much advocated; but these have the serious defect of striking on the hard surface of the land, and thus absorbing much power in entering it; and the work is found to be more economically done by shares or tynes entering in the softer soil below and wedging the earth off to a loose side. By the aid of steam the ordinary plough shares can now be driven at such a speed as to throw the earth sideways in a manner quite equal to the effect of any digging by hand. The principal mechanical conditions essential to the success of steam cultivation appear to be—an engine of simple construction, ample power, and sufficient width of bearing surface; a hauling apparatus with a horizontal drum of large diameter, avoiding any sharp bends of the rope; a direct pull upon the implement, with a rope of good quality and of as short a length as possible; a means of keeping the rope always tight and clear of the ground; an implement which wedges off the soil to a loose side, by means of shares or tynes following each other consecutively; and lastly, as small an amount of manual labor as is practicable. In the use of horses for ploughing, a large portion of their power is wasted in merely undoing the effect produced by their weight in treading down the soil; but with the steam plough the weight traveling over the field is less than one-third that of the horses, and is carried upon broad bearing wheels; and in consequence of a very much greater amount of force being brought to bear on the implement, the work is performed with much greater expedition and far more effectually than by horse labor, ensuring an adequate crop in all years.

As the result of some observations on the planet Jupiter, Mr. H. Huggins, F.R.A.S., observes that several lines in the spectrum of that planet indicate a powerful absorption by its atmosphere. These were compared with the lines of our atmosphere. The atmosphere of this planet contains some of the gases or vapours present in our atmosphere, but it is not identical with it in construction.

The Shape of Chimney Tops.

Dr. Gironard recently wrote as follows to the *Mondes* (an excellent weekly scientific paper, published in France, under the direction of the learned Abbe Moigns):—

"Positive experiments have demonstrated in the most complete manner the following principle:—The air in passing with force over any vessel provided with, at its surface, an orifice of small diameter, produces a vacuum in that vessel. If we place a glass receiver, provided with a small opening at its summit, or a stop-cock, upright upon a liquid, and if, by aid of a blowpipe or a tube, we blow strongly over it, the liquid will rise into the receiver and fill it. To obtain a vacuum by means of current of air, it is necessary that this should be brisk, and powerful enough to displace and carry with it the column of air standing over the orifice, and the surrounding air, and that the openings should be disposed in such a manner that the air passes over and does not enter the vessels. The vacuum obtained by currents of a produces the same effect as that obtained by an air pump. In making experiments on liquids strong insufflations made with the mouth, by aid of a blowpipe, over glass receivers of several litres capacity, and over six wide tubes, several metres high, provided with stop-cocks with narrow openings, have sufficed to make the liquids on which they were placed ascend and fill them, when after each insufflation I shut the stop-cock." [This latter precaution would evidently be unnecessary if the current of air was continuous, as in the case of the wind.]

Again, on the 19th, M. Gilbert-Charrier writes to the same periodical from Chartres, describing some further experiments made with mercury by Dr. Gironard:—

"The results has been so complete that in a tube 7 centtimetres(2¾ in.) high, 2 centtimetres (4-5in.) internal diameter, terminating in the form of a dome with an opening of 7 millimeters (5-18 in.)diameter, each insufflation made obliquely with the mouth by aid of a glass tube at the base of the cone, raised, displaced, and carried with it a column of air, and effected a vacuum so complete that at each blast the mercury rose in the tube to the height of 15 millimeters a column of mercury weighing 60 gram.(926 troy grs.)"

Here, says a correspondent of the London *Mining Journal*, we have the germ of an idea as to the form the summit of a chimney should take—that of a dome or cone. A bell-shaped termination to any chimney is not the right form, especially for a locomotive, in which draught is the principal element of its motive-power, encountering at high speeds a current of air equal in force to a strong gale. The tendency of the wind is to go down, and not up, a chimney with a wide orifice. In the above experiments the tube blown through was slightly inclined upwards, and in practice the wind striking against the upper part of a domed surface would pass over the orifice in an upwardly-inclined direction. It seems to me singular that the Doctors Gironard and Charrier did not think of applying the principle they demonstrated to the improvement of factory chimneys.

Commerce on the Lakes.

The commerce of the great lakes amounts at present to at least twelve hundred millions of dollars annually, and increases so rapidly that all estimates of its prospective value have hitherto fallen short of the truth. It employs about two thousand vessels and twenty thousand sailors, besides four great lines of railroad. It sends to the seaboard one hundred million bushels of grain, two million hogs, and a half a million of cattle; composing the principal part of the food of the Atlantic States and affording a large surplus for exportation. It being well known that the wheat crops of New York would hardly feed her people for one-third of the year, and that that of the New England is sufficient for only about three weeks' consumption. The cereal wealth yearly floated on these waters now exceeds one hundred million bushels. It is difficult to present a distinct idea of a quantity so enormous. Suffice is to say that the portion of it (about two-thirds) moving to market on the Erie and Oswego canals requires a line of boats more than forty miles long to carry it.

On the lakes it requires a fleet of five thousand vessels, carrying twenty thousand bushels each. If loaded in railroad cars of the usual capacity, it would

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take two hundred and fifty thousand miles in length. The four great lines from the lake to the seaboard would each have to run four hundred cars a day for half the year to carry this grain to market. This grain trade is a new fact in his history of man. In quantity it already much exceeds the whole export of cereals from Russia, the great compeer of the United States, whose total export of cereals was, in 1857 but forty-nine million bushels, being less than half the amount carried in 1864 upon the American lakes. It was the constant aim of ancient Rome, even in the zenith of its power, to provision the capitol and its adjacent provinces from the outlying portions of the empire. The yearly crop, contributed by Egypt, was fifteen million bushels. Under the prudent administration of the Emperor Severus, a large store of corn was accumulated and kept on hand, sufficient to guard the empire from famine for seven years. The product of 1860 in the five Lake States of Ohio, Michigan, Indiana, Illinois, and Wisconsin, was three hundred and fifty-four million bushels.

Testing the Telegraph Cable.

The *London Telegraph* in an article on the new cable for the Atlantic telegraph gives this account of the manner in which it is tested:—"It seems impossible that there can be any fault in the Atlantic cable when the Great Eastern goes to sea. To say nothing of the tests applied to it at the manufactory, it is tested not alone after it has been taken on board, but during its delivery into the ship. As soon as a length is brought alongside, one end is connected with the coils already on board, and the other end with the instruments in the testing room. The circuit is thus made through the whole extent of the coil—the portion on board and the portion alongside. The process of hauling in then commences, and the insulation is continuously observed. The instruments in the testing-room record the smallest deviation from absolutely perfect insulation. It will be understood that an insulation which shall be quite perfect, as an electrician understands the word, is not attainable. A piece of metal separated by means of the purest glass, and enclosed in the driest atmosphere that can be obtained, will, if charged with electricity, lose that electricity after a time. In speaking of insulation we must therefore be understood to mean an approximate condition; but the approximation in the case of the new Atlantic cable comes so near to perfection that this rough tarry rope s a scientific wonder.

"The last dying pulsation of the old Atlantic cable was forced through by means of a galvanic battery consisting of two hundred and forty cells. The submarine telegraph from London to Amsterdam is habitually worked with a battery of fifty cells, and such a battery is commonly used for the other submarine lines to Europe. Signals have been repeatedly sent through more than thirteen hundred miles of the cable now on board the Great Eastern by means of one cell. Galvanic currents so feeble that they could not have been felt by the hand, and might have been passed harmlessly through a circuit completed by the operator's tongue can be used to convey messages along a length of cable that should very nearly stretch from London to St. Petersburg, Over needle instruments such as those in ordinary use for land telegraph a current from one cell would be powerless.

"To record such faint pulsations of electricity it is necessary to use Professor Thompson's mirror galvano-meter. This beautiful instrument consists of a mirror about the size of a fourpenny piece, made of microscope glass, and so thin that it weighs only a grain. On the back of this mirror a minute magnet is fixed, and thus supplemented it is suspended by a silken fiber in the heart of a coil of wire, so that any current passing through the coil deflects the magnet and the mirror along with it. A ray of light reflected by the mirror falls on a scale, distant about eighteen or twenty inches, and reveals its faintest movements. Different combinations of these movements represent the different letters of the alphabet, and thus the apparently erratic wanderings of a ray of light are made to convey intelligence. An instrument of this kind is constantly used to test the cable, as it is hauled on board; and if any fault had existed it could not have passed without detection. Up to this time, when there are on board the ship and alongside, one thousand nine hundred and seventy miles of cable, no fault has been discovered."

The Telegraph Cable Completed.

The Atlantic telegraph cable was completed on the 29th. The completion was witnessed by a numerous and distinguished party, and as the end was deposited in the tank hearty cheers were given. The company then adjourned to the Ship Tavern, where a sumptuous banquet was given in honor of the event by the Telegraph Construction and Maintenance Company (late Glass, Elliott & Co.), the makers of the cable.

The cable has been made on an average at the rate of seventeen miles per day complete, and in some days its outside covering of hemp and iron has been overlaid at the rate of one hundred and seventy-three miles a day, through not a fathom or a foot has been manufactured without every part being kept under constant test for "conductivity" and insulation, and to this hour it is as regularly tested as it was a year ago when the first mile was twisted. It is believed that the *Great Eastern* will start in the very early part of July, and certainly, if possible, not later then the 10th. With her will also sail her Majesty's ship *Terrible* and another paddle wheel steam frigate of great power not yet chosen, but which, like the *Terrible*, will give towing aid to the *Great Eastern* in case of mishaps to her machinery, either screw or paddle. Every care has been taken to get these engines into the highest state of good working order; but it cannot be denied that the very possibility of their breaking down is looked upon with something like anxiety. They will certainly not be overtasked, as it is intended, if possible, not to let the vessel go beyond a speed of six knots, a minimum of velocity which it will be difficult to keep to if steerage way is wanted quickly, and which will, be found absolutely impossible to retain in a seaway. On this occasion, however, the middle of July is chosen as being thought even more favorable in point of weather than the middle of June, when the last Agamemnon cruise was commenced. Captain Anderson, is in favor of starting towards the early part of July, and his long experience in command of the China has very properly induced the directors to give every weight to his opinion. In addition to Captain Anderson, all the officers connected with the ship, with the exception of the chief engineer, have been chosen from the Cunard service. With ordinarily fair weather, and steaming at the rate of six knots, it is expected that the voyage from Valentia to the Bay of Hearts' Content, in Newfoundland, will occupy from twelve to fourteen days, during every hour of which regular communication will be kept up with England.

Tropical Vegetation.

A correspondent of the Boston *Commonwealth* says :—

"I have been a little astonished at tropical vegetation; taken as a whole, in differs externally very little from temperate in appearance. The palms, canes and vines alone would distinguish it is a superficial observer. The palms are almost all along the waterside, the cocoa-palms only grow by the sea. The prettiest plants are the banana-plants, which have broad, light-green leaves, which are so very tender that the wind often breaks the leaf on each side of the midrib into fringes. The male flower is shaped like a top, and hangs down some distance below the bunch in the early stages of the fruit. The palms are shorter in the trunk than those you generally see in pictures. The leaves of the palm are something like a fern, but are hard and wooly. The leaf-sheath is fibrous, and in texture like woven-cloth. The best dishes they have here are frijoles, a kind of red bean, and fried plantains, which I liked very much. They taste between a sweet-potato and a peach."

REDUCTION IN TERMS.

With a view to encourage the formation of "Clubs" for the ensuing volume of the SCIENTIFIC AMERICAN, we offer to take subscriptions in *Clubs of ten or more at* $2 50 *per annum*. We trust that our friends will set themselves to work to get up Clubs at the rate here proposed.

A RAILWAY train recently ran into a water spout in Scotland, causing great consternation among the passengers.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

Circular Oven.—This invention consists in an endless arch or channel divided into a series of distinct sections, each of which is provided with openings for introducing the fuel and the materials to be burned, and communicates through a radiating flue with an annular smoke chamber, in combination with suitable slides or movable partition and with a central smoke stack communicating with said annular smoke chamber by four (more or less) passages, in such a manner that brick or other material introduced into the several sections of the kiln can be gradually heated and cooled, and the operation of the kiln can be continued for any length of time with great economy in fuel. T. E. Hoffmann, of Berlin, Prussia is the inventor.

Grain Separator.—This invention relates to a grain separator for separating impurities from thrashed grain, and also for separating oats from wheat. It consists in a novel and improved means for operating or communicating a shake-motion to a shoe containing a series of screens, and also in a novel arrangement of said screens within the shoe as well as in the manner of hanging the shoe and a screen below it, whereby the device is prevented from becoming choked or clogged and made to operate far more efficiently than the ordinary separators in use. S. K, Ayres, of Delton, Wis.

Roller for Trunks.—This invention consists in mounting the roller on a flexible plate with lugs which can be spread or sprung open to admit the roller, if it is desirable, in such a manner that the roller can be either used as a plain bottom roller or that it can be applied to the corner by securing one end of the plate to the bottom, and turning its other end up over the edge and securing it to the side of the trunk, as may be desirable. John Schmadel and John A. Lieb, of Newark, N. J., are the inventors.

Boy's Sled.—This invention relates to a an improved sled for children, and it consists in constructing the sled in such a manner that it may be extended or enlarged, as may be desired, in order to hold a greater or less number of boys; and it also consists in an improved brake for checking the speed or stopping the sled when necessary; and further, in an improved guiding or steering apparatus. D. G. Hussey, of Nantucket, Mass., is the inventor.

USEFUL RECEIPTS.

TO POWDER CAMPHOR.—Camphor may be beaten in a mortar for some time, without being reduced to powder, but if it be first broken with the pestle, and then sprinkled with a few drops of spirit of wine, it may be readily pulverized. Powdered camphor is much used in tooth powders, fireworks, etc.

PORTABLE LEMONADE.—Tartaric or citric acid 1 oz.; finely-powdered loaf sugar ½ lbs; essence of lemon 20 drops; mix; 2 or 3 teaspoonfuls make a very pleasant glass of extemporaneous lemonade; also powdered sugar 4 lbs.; citric or tartaric acid 1 oz.; essence of lemon 2 dr.; mix well. As last. Very sweet and agreeable.

FURNITURE, PASTE.—Turpentine 1 pint; alkanet root ⅛ oz.; digest until sufficiently colored, then add beeswax, scraped small, 4 oz.; put the vessel into hot water, and stir until dissolved. If wanted pale, the alkanet should be omitted.

FUMIGATING PASTILLES.—Powdered gum benzoin 16 parts; balsam of tolu and powdered sandal wood, of each 4 parts; a light charcoal (Linden) 48 parts; powdered tragacanth and true labdanum, of each 1 part; powdered nitre and gum arabic, of each 2 parts; cinnamon water 12 parts; heat to a smooth ductile mass, form into small cones with a flat tripod base, and dry in the air.

PINK SAUCERS.—Well washed safflower 8 oz.; carbonate of soda 2 oz.; water 2 gallons; infuse, strain, add French chalk, scraped fine with Dutch rushes, 4 lbs.; mix well, and precipitate the color on it by adding a solution of tartaric acid; collect the red powder, drain, add a very small quantity of gum, and apply the paste to the saucers. Less chalk may be used for a very fine article.

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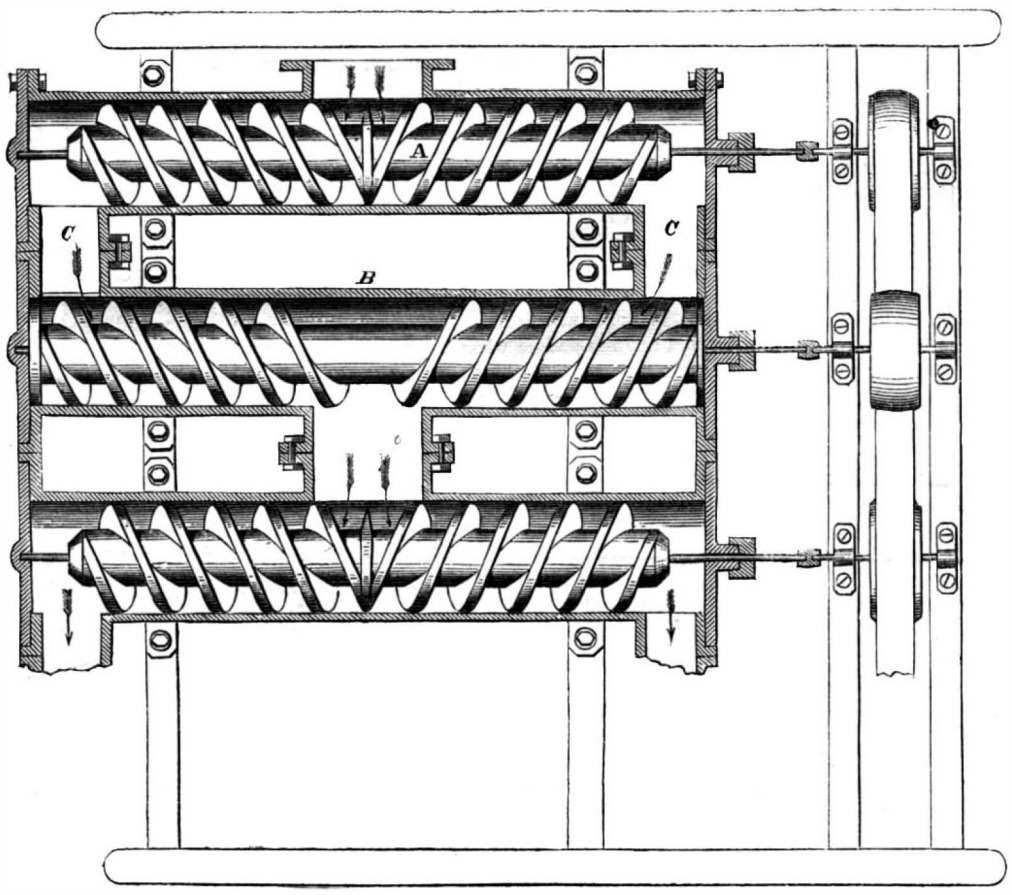
Improved Hydraulic Motor.

In this machine Mr. Welham claims to have utilized the whole power of the water. In an interview with him he stated that, being convinced that the full force of any stream could be employed, he designed this arrangement to effect the object. The machine, in detail, consists of right and left-handed screws, A, in the case, B, to which water is admitted through the opening—as shown by the arrows. After propelling the first screws, the water passes through the opening, C, into another case containing more screws, when whatever force remains in the water is taken up by it. A third case and a third set of screws is provided, but in this instance the water enters at the center and discharges at each end. Any number of cases and screws may thus be employed and act with useful effect; the end of each cylinder or screw is prolonged into a shaft on which there is a pulley to transmit power.

We have given the inventor's views of this machine, and not our own. One of them may be seen running at the aqueduct bridge, Georgetown, D. C., where a series of experiments are being made with it.

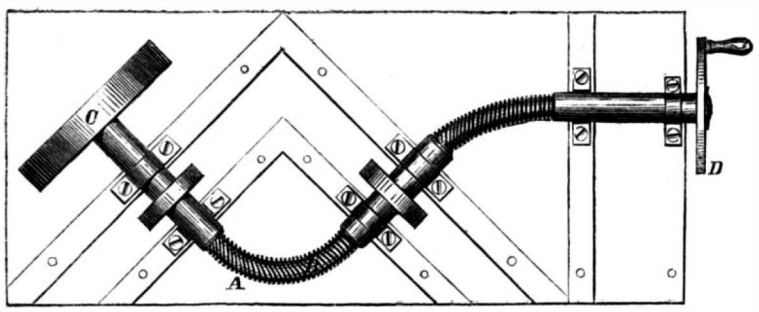
It was patented on May 31, 1864, by Thomas Welham; for further information address him at 100 Broadway, New York.



WELHAM'S HYDRAULIC MOTOR.

Method of Transmitting Power.

It is well known to mechanists that in order to transmit power at right angles it is necessary to use bevel gearing, universal joints or similar devices. These consume power, and in the case of gearing make a great deal of noise and jar, which render delicate operations impossible in their vicinity.



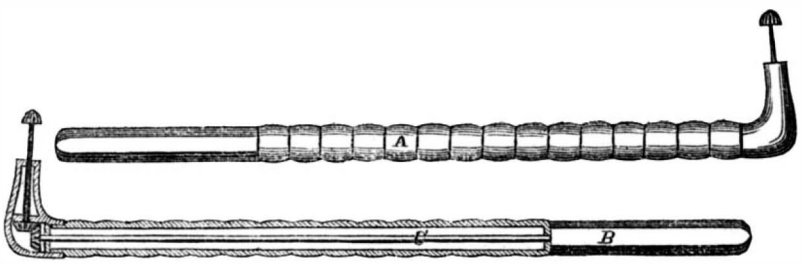
WELHAM'S METHOD OF TRANSMITTING POWER.

The inventor of this arrangement claims that it is an efficient and useful substitute for gearing; that it is wholly noiseless, may be used at any angle, requires no adjustment or lining up, and in all other respects desirable. In construction it is simply an elastic tic shaft, A, composed of rubber strengthened with canvas, or of gutta-percha, and surrounded externally with a wire, B, to preserve its rigidity when under strain; C is a pulley standing obliquely with the prime motor, D, from whence the power is derived. It is claimed that by this device a simple and efficient transmitter of power is obtained.

This invention was patented by Thomas Welham, on Jan. 31, 1865; for further information address him at 100 Broadway, New York.

Improved Rotary Countersink.

Those persons who have undergone the delightful experience of tooth-filling and plugging in all its varied details, will appreciate anything that tends to alleviate their sufferings. Dentists will know how to value the instrument here illustrated, for by the use of it the work is much expedited and more perfectly executed. It also saves the patient from fatigue, lessens the flow of saliva from this cause, and is, in other obvious points, a desirable improvement on the common instrument. By the simple adoption of two small bevel wheels, the rose head or countersink, is caused to revolve, thus cutting away the decayed parts very rapidly and producing a much better artificial cavity in a shorter time, for the introduction of the filling, than is possible with the old-fashioned tool. It is not at all cumbrous or heavy, and is, in all respects, desirable. The handle, A, is stationary, and the gears are revolved by the shaft, B, and rod, C, the section, Fig. 2, shows the internal arrangement. A patent is now pending on this invention; for further information address Thomas Welham, No. 100 Broadway, New York.



WELHAM'S ROTARY COUNTERSINK.

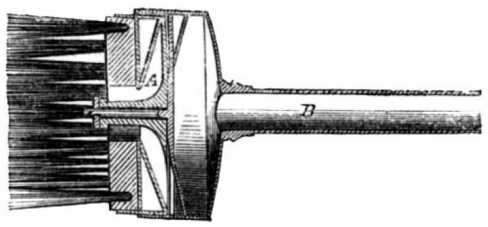
Extension of the Bessemer Manufacture

The Birmingham correspondent of the *London Engineer* says:—"The growing application of the Bessemer system to the production of steel, with tha much larger attention that is being paid now then has been paid for some time past to the application of steel to uses before assigned to iron, is occasioning a growing demand in South Staffordshire. Mr. Clayton, at Westbromwich, is now erecting eighteen furnaces, at the works of the Dowlais Company, twenty-four at the Barrow Steel Works, is making castings for six at Ebbw Vale, is on with the third lot for Messrs. John Brown & Co., Sheffield, and after putting up twenty-two for Messrs. Cammill & Co., at the Cyclops Works, in the same town, is now putting up six for the Yorkshire Steel and Iron works of the same firm at Penitone. The same maker is also putting up furnaces at the Lancaster Steel Works, Gorton-lane, and at the Gibralter Works, Newton Heath. These furnaces are all for smelting iron to make steel or for the heating of ingots of steel."

HYDRAULIC BRUSH.

This is one of the most decided novelties in the way of brushes that we have seen in a long time. It is not only novel but useful, and can be employed with great advantage in many places. It is simply a brush constructed with a small turbine wheel, A, at the back and set in a proper frame, so that when the stream of water, which is forced through the hose, B, comes in contact with the wheel the brush will revolve with great velocity and considerable power. For cleaning carriages, windows, wood-work of any kind, or machinery, this brush will be found valuable, for the rotary action of the brush, in connection with the water, causes it to perform with unsurpassed rapidity and effect.

Since the brush revolves the bristles are always



worn evenly to the butt, and it lasts much longer than a common "Turk's head" brush, which is generally used for washing windows. We think this a valuable and useful novelty. It was patented on Jan. 31, 1865, by Thomas Welham, of Baltimore, Md. For further information address him at 100 Broadway, New York.

A PUMP WHICH CATTLE CAN WORK THEMSELVES.—Mr. Cousins, of London, has invented a pump by which cattle can water themselves without human aid. The water is forced up by the weight of the animal operating on a platform which sinks down a certain distance by its weight, causing the water to rise in the pump and to flow out to the extent of three pailsful. As soon as one has slaked its thirst, another takes its place on the platform which brings up another supply, and so on till all the flock are watered. This is a labor-saving affair, certainly.—*Canada Farmer*

[There are several patents on such pumps in this country.—Eds.

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Improved Steam or Gas Engine.

These engravings represent Welham's steam or gas engine, which consists of two right and left hand screws, A, set in a case or cylinder, B. These cylinders are placed in the boiler, C, and receive steam therefrom.

One of the cylinders has a central flange, D, upon it, against which the other cylinder works; the alternate action of both, in contrary directions, tending to balance the pressure on the cylinder, so that it is not all thrown on one end of it.

The steam enters the case, B, at E; and after passing its length, issues into the other cylinder, F, and finally through an opening into the atmosphere when used as a high pressure engine, or into a condenser when used at low pressure.

The screws are both connected by gearing, H, so that their rotation is balanced or equilibriated. By inclosing the cylinders in the boiler, the latter serves as a steam jacket to prevent radiation and condensation, and renders the usual fittings of pipes, etc., unnecessary. A pulley, I, is fixed on one end to transmit power from the revolving screw, to any machine it is desired to drive.

Fig. 3 shows an end section of the boiler and cylinder, wherein the positions of the several parts are given; the screws are double or triple threaded, as required; a double thread is preferable on account of the greater area and steam space left available. Any desired number of screws may be used, and the proportions and pitch vary with the work to be done.

This engine was patented on Jan. 31, 1865, by Thomas Welham, of Baltimore, Md. For further particulars address Thomas Welham, No. 100 Broadway, New York.

Fig. 1

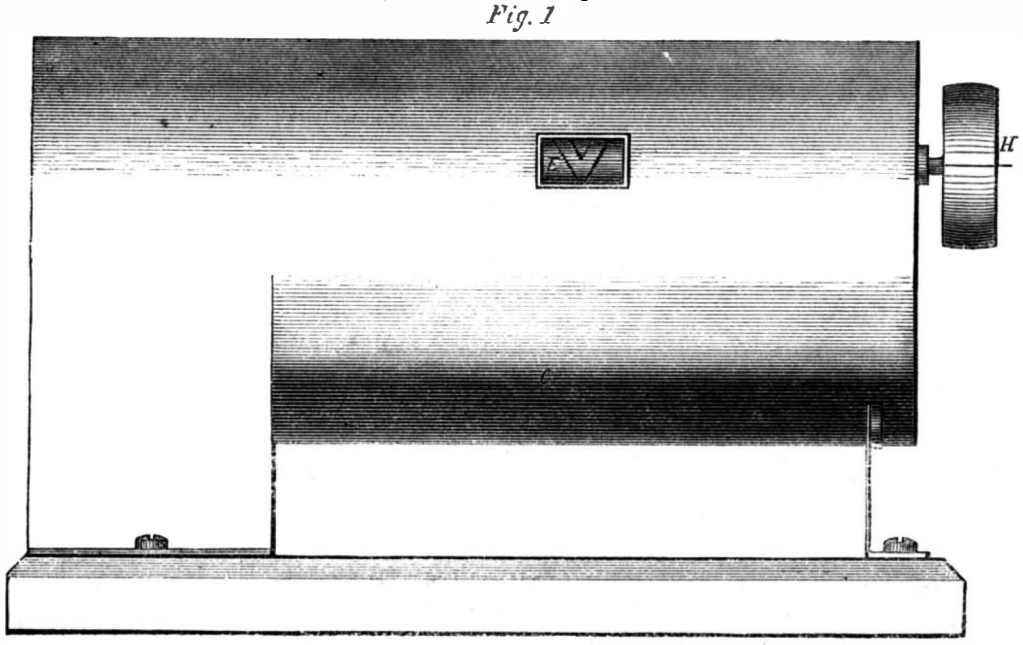
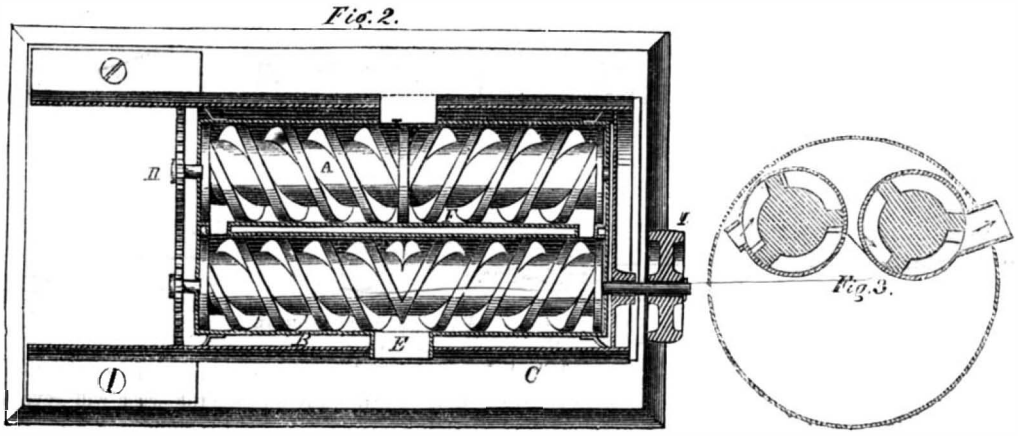


Fig. 2.



WELHAM'S STEAM OR GAS ENGINE.

German Wood Carving.

Some of the more delicate and elaborate specimens of carving—such as the groups for chimney-piece ornaments, honored by the protection of glass shades, are made of lime-tree or linden wood, by the peasants of Oberammergan, in the mountain parts of Bavaria. There were specimens of these kinds of work at our exhibitions which could not have been produced in England at thrice the price; our good carvers are few, and their services are in request at good wages for mediæval church-work. We should be curious to know what an English carver would require to be paid for a half guinea Bavarian group, now before us—a Tyrolese mountaineer seated on a rock, his rifle resting on his arm, the studded nails in his climbing shoes, a dead chamois at his feet, his wife leaning her hand lightly on his shoulder, his thumb pointing over his shoulder to denote the quarter where he shot the chamois, his wooden bowl of porridge held on his left knee, the easy fit and flow of garments of both man and woman—all artistically grouped and nicely cut, and looking clean and white in linden-wood. No English carver would dream of such a thing at such a price.—*All the Year Round.*

[Patents have recently been issued to parties for a material composed of wood, dust and other ingredients, which can be molded into any shape or form, however intricate, and retain the same when removed from the mold. In this way beautiful carving, which would cost immense sums if executed in the ordinary way, can be afforded for a small sum.—EDS.

The Shunt Gun Tried and Condemned.

Our predictions with regard to the ultimate destiny of the shunt system have been singularly and completely verified. After a protracted trial, it has at length had that verdict pronounced upon it which we from the first specified. The shunt gun has been definitively abandoned, and no large guns will for the future be rifled on that principle. The 64-pounders which have so very recently been finished and issued to the royal navy, have utterly failed on trial on board ship. The shot with the hollow head did not travel in a straight course, and were found to break up on impact, or even by a fall upon the ship's deck. The intention now is to make new shot, which are to be hollow in the rear. The shells from this naval 64-pounder have been found to burst prematurely in the gun, and in one gun, on board the "Excellent," the rifling was entirely destroyed from this cause. A second gun was also seriously damaged by a similar premature explosion of the shell. The rifling of the French gun, which has a gaining twist, has been strongly recommended by the Ordnance Select Committee, for naval guns. The committee, however, states that it will be necessary to introduce sundry modifications, which it is now engaged in carrying out, previously to applying the system to the naval guns, of 7, 8, and 9 in. bore, weighing 6½, 8, and 12½ tuns, respectively. The new gun, constructed according to the committee's modifications of the French rifling, is to be called the "Woolwich" gun. This, then, is the present position of matters in this respect, a position which speaks so plainly for itself as to render more than superfluous any comment on our part.—*Mechanics' Magazine.*

Annealing in Closed Vessels.

At a recent meeting of the French Society of Civil Engineers, Mr. Julien, in the course of a discussion remarked:—"The most interesting result of M. Fremy's researches is that all commercial irons and steels contain nitrogen, absorbed in the successive heatings they haveundergone; annealing in a closed vessel makes sheet irons infinitely more supple than reheating in open air. Steel manufacturers should profit by this investigation to reheat in a closed vessel the sheet metals and all fine steels."

An English Breech-loader.

A new gun of this description has been recently patented by the Messrs. Powell & Son, of Birmingham. The principle upon which it is constructed and acts is as simple, and, at the same time, as complete as can be conceived. Between the hammers there is placed a lever with a thumb-bit on the end; on raising the bit the barrels are released and rise by their own weight; one of Eley's cartridge cases is inserted, and on shutting down the barrels they lock themselves. The mechanism in the body of the gun is one piece with the lever; there are no small bolts or other delicate contrivances, doubtful in their operation; the whole is as solid and substantial as the hammer. The patent may be said to consist of a lever and a double spring in the action, applied through the top of the stock. The simplicity of construction of this implement will much diminish the chances of its getting out of order, and the invention has already attracted much attention.—*London Times.*

[This seems to be a sporting gun, as the *Times* speaks of *barrels.*—EDS.

Cabbage Plants in Three Days.

Mrs. Paull, of Mich., thus relates, in the *Rural New Yorker*, how she raised cabbage plants in three days:—

"I took a box six inches deep and of sufficient size to hold all the plants I wanted. Then I selected stones of the size of a hen's egg, enough to cover the bottom of the box, and poured hot water on them, and at the same time I had earth (good, rich, garden mould,) in an old dripping pan, heating on the top of the stove, which I heat hot enough to kill all seeds of weeds and insects.

"When all was hot enough, I placed the stones on the bottom of the box, and put the hot earth on top of the stones, and then filled the box with cold earth. Then I made a print with the tip of my finger where I wanted each plant to stand, put two seeds in a place for fear all might not come up, pressed them into the earth and cover them sufficiently deep. Then I took the green leaves of the pie-plant and laid all over them, and set the box in a chair in my cook room. I had some fire in the stove for about half a day, and the rest of the time there was none; and when they had been planted nineteen hours and a half, I raised the leaves and most all of them had come up, but the leaves were not yet expanded. I did not put them in the sun immediately, but kept them in the shade until the third day. I now have as nice, healthy looking plants as any one could ask for.

A MONSTER pig trough has been manufactured at Dorchester, for a swinery in England. The trough is 500 feet long, and shaped like a horse-shoe. Two thousand pigs will be able to feed out of it at one time.

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Correspondence

Transporting Power by Electricity.

MESSRS. EDITORS:—Water power, it is well known, is often inconveniently situated for manufacturing purposes. Now, why could not such power be employed to drive one or more electro-magnetic machines placed in the immediate neighborhood, and the electricity thus induced carried over insulated conductors to almost any distance, and finally, where the power is required, into a proper apparatus for the decomposition of water or other liquid.

The gases generated might then be consumed in a gas engine—one perhaps, similar to Lewis's—either mixed or unmixed with other gases, as experiments would determine.

This is offered rather as a question than otherwise, but if, electro-magnetic machines are not too expensive, and have reached such perfection in construction, as to give nearly the power expended in driving them, in an electric current, then by the principle of the correlation of forces now recognized, we should have ultimately—allowing the usual loss—from one-half to three-fourths of the original water-power.

E. L.

Hackettstown, N. J., June 7, 1865.

[Very sensible, and all sound, if the conditions obtained, but they do not. Electro-magnetic machines do not give nearly the power expended in driving them, and probably never will, as it is impossible to convey, or even produce electricity without losing a large part of it. The nearer and more direct the application of power after it is generated the better, as every change in form or direction involves loss; even the turning of a corner with a bevel gear is said to consume some four or five per cent in friction.—EDS.

A Microscope in a Spectacle Bow.

MESSRS. EDITORS:—Spectacles for persons who have lost the sight of one eye, and who are obliged to use glasses, may have in one bow a glass to suit the sight, and in the othe a microscopic or magnifying glass. Such a glass would not make a bad appearance, and could be used as a microscope at any time by taking the glasses from the face and holding the lens in a proper position for the eye that has the sight. The use of a microscope is certainly a great pleasure; to look into a flower with one and see its beautiful colors and constructions would certainly repay all one costs. I think microscopes should be used by every one; the cost is so little for a pocket one, and it can be carried so handily. Their use would lead to the examination of every minute object that attracts attention, and also to close observation, by which alone good practical knowledge is obtained. It is by such means our greatest discoveries are first made. How often we pass over beds of mineral wealth without knowing anything of their value; but if in the habit of using a microscope their usefulness might be discovered. I would recommend all persons to use one; it will be found a great source of pleasure and would give an insight to the minute objects in nature which cannot be obtained in any other way. Its refining influence upon the mind cannot be too highly valued.

This is but a small matter, so I shall not claim a patent for it; but if it is original—which it is with me—and useful, I would like to have the credit.

I have written the above in consequence of your asking for contributions. I think, with you, there are few that cannot suggest something of use to the world, and I further think that no one, has a right to live a life time without doing so.

A. PURVES.

Philadelphia, Pa., June 9, 1865.

Trial of Copper Cartridges.

MESSRS. EDITORS:—The question of the failure of the copper cartridges, which is being discussed in the SCIENTIFIC AMERICAN, is one of very great importance. I take the liberty to suggest the following mode of ascertaining the facts, without waiting for the winter months in which to test the question.

My suggestion is, that a sufficient number of the best cartridges be placed on ice, in an ice-chest and in a cold cellar. India-rubber cloth could be placed between the ice and the cartridges, if desired. It is well known that wetting these cartridges will not prevent their explosion in summer. The theory of Mr. Cleavland is that the cold weather of winter so condenses the air contained in the powder that the fulminating material is made damp and will not explode.

It seems to me that the above process would demonstrate the facts in the case. By keeping the cartridges on the ice for some time and then trying them in the cold temperature of the cellar, before the contents of the cartridge had any chance to grow warm or dry, the truth of Mr. Cleavland's theory could be ascertained.

A READER.

Peterboro', N. Y., June 6, 1865.

Petroleum for Gas.

MESSRS. EDITORS:—Some weeks ago you made a statement in the SCIENTIFIC AMERICAN that "if petroleum could be used on gas works so as not to fill up the pipes," it would obviate the difficulty heretofore existing in using it for that purpose.

I have been putting up gas works for the past five years and have used either the crude oil or that with the naptha removed, and no stopping up of the pipes has occurred to my knowledge, and no more condensation than in coal gas. The light from one foot of gas from petroleum is equal in value for illumination to four feet of coal gas.

J. C. APPLETON.

Boston, Mass., June 5, 1865.

[There are only two ways in which petroleum can be prevented from condensing after evaporation—one is by burning the vapor while hot, and the other is to convert the substance into permanent gases by destructive distillation The first method is easily effected in a kerosene lamp; the success of the second plan is so improbable that people will hardly believe that it has been done except upon the authority of a series of experiments conducted by some disinterested person who is sufficiently well known to command confidence.—EDS.

Latent Heat from Condensation.

MESSRS. EDITORS:—My attention has been lately called to a scientific question, which has puzzled me greatly, and I therefore send it to you, hoping that either you or some one of your numerous readers will answer it through your columns. It is a well-known fact that the condensation of steam in pipes sets free an immense amount of latent heat, while in the atmosphere, on a much larger scale, condensation goes on, but reversely, produces cold.

The question is, as the condensation of vapor in pipes produces so much heat, why, on the same principle, does not condensation in the atmosphere produce a correspondingly greater amount of heat?

T. E. K.

Richmond, Ind., June 4, 1865.

[What grounds has our correspondent for supposing that condensation in the atmosphere produces cold? That is the only thing that puzzle us in the matter.—EDS.

The San Francisco Clock.

MESSRS. EDITORS:—Having read a couple of articles in your paper about the Montgomery-street clock, in San Francisco, I am induced to send you the following. The clock was called "the mysterious clock," and it kept the correct time of San Francisco. I saw it in 1857. There were three visible pieces—a piece of glass about twenty inches square and one-fourth of an inch thick, and two hands. The minute hand was formed at the butt like the stock of a rifle. At the butt or short end it was about five-eighths of an inch wide, five-eighths of an inch thick, and an inch and a quarter long, and hollow. This box contained the works that drove the hands round a pin in the center of the glass. The works were not visible. There were two holes in the top of the glass, near the edge, through which two common hooks were passed, and these hooks hung on a round brass rod that ran across the window. Any one could see through the glass, and see there was no secret connection, only what might be in the butt end of the minute hand. The figures were in gilt, and on the glass.

T. D.

Albany, June 10, 1865.

Improvement in Microscopes Wanted.

MESSRS. EDITORS:—Is it not a surprising circumstance that the inventive genius of our time has never been turned to the improvement and increase of the mechanical contrivances for the grinding and polishing of lenses for the microscope? Even so early as the day of Descantes, mathematicians demonstrated how the main imperfections incident to the use of all lenses whose curves were sections of the sphere could be evaded by other curves, and yet no invention has ever been made by means of which such other curves could be obtained.

Such curves are the elipsoidal and hyperbolical, either of which, it is demonstrated to a certainty, will totally overcome all spherical aberration and curvature of the image, while by accomplishing this they free us from other difficulties and defects of compound lenses incident to our present grossly imperfect modes of overcoming the former.

The so called "opticians" of our day, with perhaps a single exception, are, my experience convinces me, totally destitute of the inventive qualities of their great prototype, Frauenhofer, and I have long thought it were worth while for some mechanic to turn his efforts in this direction. Success would no doubt yield him a standing in the scientific estimation not second to that of the great and original worker I have named—would yield him a position any man might be justified in coveting.

RUFUS KING BROWNE.

No. 12 East Sixteenth street.

[We know of no department in any of the arts to which more thought, intelligence and inventive genius has been directed than that of grinding lenses for microscopes. While spherical curves are easily obtained by the simple rotation of circles, the difficulty of forming other curves with the perfection requisite in a lens, our correspondent would perhaps more fully appreciate after he had made the attempt. An important improvement in grinding lenses for microscopes has recently been made in this city by Mr. Wales, a young Englishman. His objectives are pronounced by our most eminent microscopists decidedly superior to any made abroad. Indeed, some careful observers say that the definition obtained by Mr. Wales's combination of $\frac{4}{10}$ths focus superior to that of Smith & Beck's $\frac{1}{5}$th. Our correspondent can see some of these lenses by calling at the store of S. Hammond, importer and repairer of fine watches, No. 41 William street.—EDS.

The Perpetual Motion Clock.

MESSRS. EDITORS:—Your New Zealand correspondent is mistaken in assuming the so-called "perpetual motion clock" described by him, to be "new to all the world." About fifteen years ago, my father, John M. Patton, of Milton, Northumberland County, Pa., invented and had constructed a clock, operating upon exactly the same principle, viz., the expansion and contraction of the atmosphere from natural changes in its temperature. It consisted in the main of a cylindrical reservoir, in which was inverted another open-mouthed cylinder of smaller diameter. Olive oil was poured in the outer cylinder to form a packing between the two. Suitable guides were attached to keep the interior reservoir concentric to the outer one. Upon the head of the center cylinder a double rack was erected, which drove clock gear of the lepine style. This wound a spring, in which was stored power to continuously drive the time-computing gear. This clock ran about two years; it then stopped, from mechanical imperfections. Portions of it are now in my possession.

WILLIAM P. PATTON.

Harrisburg, Pa., June 12, 1865.

A SERIOUS explosion of petroleum took place recently at the works of Messrs. Charles Price and Co., at Frith, Eng. A workman held a naked lamp over some petroleum oil, in order that he might note the index which marked the rise of the liquid, before putting the cover over the retort. An explosion was the consequence, and three men were seriously injured about the head and face thereby.

A CAR has been contrived for the transportion of butter. It has an inside lining of inch board, with a space of three inches left, which is filled with sawdust.

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POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

The Association held its regular weekly meeting at its room at the Cooper Institute, on Thursday evening June 8, 1865, the President, S. D. Tillman, Esq., in the chair.

IMPROVED GUN LOCK.

Mr. W. H, Baker, of Marathon, N. Y., exhibited a gun lock in which the main spring was placed directly under the cock upon the outside of the lock.

Mr. Blanchard remarked that the improvement made an extremely simple lock, and obviated the necessity of cutting away the stock to as great an extent as in other locks.

IMPROVED SADDLE TREE.

Mr. W. H. Disbrow, of this city, presented an improved saddle tree made of leather and strengthened by straps of steel. The advantage is in the elasticity by which the saddle adapts itself to the form of the horse's back; it is also several pounds lighter than the wooden tree. Mr. Disbrow said that he had used it extensively in his riding school, and that it never chafes a horse's back.

SLAUGHTER HOUSES NOT INJURIOUS TO HEALTH.

Col. Devoe read a long paper on slaughter houses, giving a history of their establishment in Europe and in this country, citing the ordinances in relation to them in this city from the first one in 1636. A large portion of the paper was devoted to an examination of the question whether slaughter houses are injurious to health, and the argument in the negative was sustained by a very formidable array of facts. It was shown that some wards in this city have as low a rate of mortality as the country districts, only 17 in the 1,000 annually, while in other wards the annual mortality is over 60 in the 1,000, and that the healthiest wards are those in which there are the largest number of slaughter houses. Statistics were also produced of the deaths resulting from yellow fever and cholera during the several ravages of those epidemics, showing a remarkable exemption from the disease among butchers and those living in the vicinity of slaughter houses. The famous report of the French commission, was, of course, cited, containing the statement that not only butchers, but the workers in animal offal in the city of Paris have quite as low a rate of mortality as any other portion of the community.

One of the most interesting facts brought out was the extreme unhealthfulness of our tenement houses. In one of these containing 329 persons the average sickness all the time was 1 in 3, and the average annual mortality 105 in the 1000. All the sickly wards are those in which the inhabitants are crowded, while the healthy ones are invariably those inhabited by the more wealthy portions of the people, among whom there is no crowding.

BALANCED SLIDE VALVE.

Mr. Charles E. Emery, an engineer in the U. S. Navy, exhibited a balanced slide valve, which seems to be one of the most promising that has yet been invented. A hole is cut in the back of the steam chest directly over the valve, and is covered by a plate which is connected with the valve by a rigid stem. It will be seen that the valve and plate both wear in the same direction, so there is no tendency to produce a leak.

FAIR OF THE AMERICAN INSTITUTE.

The President remarked that as this was the last meeting before the summer recess, he would announce that the managers of the American Institute had decided to hold a fair in the fall; the grounds of Palace Garden, corner of 14th street and 6th Avenue, have been secured; and the fair will be opened on the 14th of September. Preparations will be made for running machinery, and an unusual display of novel machines is anticipated.

ADJOURNMENT FOR THE SUMMER.

The Association then adjourned to the 21st of September, when the novelties of the fair will be the regular subject for discussion.

ESPARTO, or Spanish grass, is now extensively used in papermaking. Great quantities of this grass are brought into the Tyne by ships from Spain, and stored in the Tyne Dock of the North Eastern Railway Company, whence it is despatched by rail to all the papermaking districts in the kingdom.

FARMERS' CLUB.

The Farmers' Club of the American Institute held its regular weekly meeting at its Room at the Cooper Institute on Tuesday afternoon, June 13th, the President, N. C. Ely, Esq., in the chair.

BIRDS AND INSECTS.

Dr. Trimble said that he had recently visited the grounds of the Pennsylvania Hospital for the Insane, at Philadelphia, where the good effects of protecting birds are very strikingly exhibited. About fifty acres are inclosed by a high stone wall, and for twenty-five years no one has been allowed to discharge a gun on the grounds excepting Dr. Trimble, who, for scientific examination, has been allowed to shoot two or three birds not to be found elsewhere. In consequence of this protection, all the birds that will live there are found in the inclosure in great numbers. There are cherry trees in the grounds, and when the cherries first began to turn red the trees were swarming with birds, especially the grakle, or crow blackbird. But they soon became cloyed with the fruit, and by the time the cherries were ripe had almost entirely ceased to eat them. Dr. Trimble visited the grounds in company with a number of naturalists, and they made a search for worms, but none were to be found; the birds had exterminated them. Two crow blackbirds were shot and their crops examined; not a fragment of cherry was found in either, but the crops were filled with water beetles from the neighboring marshes, showing that the birds had learned to come to this inclosure for protection, even when they were obliged to seek their food elsewhere.

PRESERVING THE VIRTUE OF HOPS.

Solon Robinson called on Prof. Percy to explain his mode of preserving the aroma of hops.

Dr. Percy:—It is well known that hops retain their virtue only about six months after they are gathered, when they begin rapidly to deteriorate, and at the end of two years they are nearly worthless. This is a very serious evil, as the crop fails in some seasons, and great efforts have been made to devise some plan to obviate it. Some twenty years ago my attention was called to the subject, and I set about its investigation. The first step was to ascertain the cause of the deterioration, and this I found to be oxidation, the general process of the decay of organic substances. The lupulin of the hop consists of an essential oil and a resinoid substance, which, by oxidation, becomes insoluble in water. It was known that this could be extracted by alcohol or ether, but these were too expensive, and they spoiled the ale. In 1838 I made the discovery that the extract might be made by alkalies. I accordingly dissolve the lupulin in soda, and then condense the solution in a vacuum pan without access of atmospheric air. I then add muriatic acid, which converts the soda into muriate of soda, or table salt. The extract thus made I preserve by means of glucose, or grape sugar. Grape sugar is one of the most general preservatives against oxidation that we have. Mr. Miles, proprietor of the Croton Brewery, in this city, has made several barrels of ale from hops preserved by my process, and it is a delicious beverage, though not as bitter as beer made from fresh hops. Mr. Miles is a man who puts nothing in his ale but hops, malt and salt. These are the only things required besides water for making good ale or beer, and no honest brewer will add any others. I am sorry to say that nearly all English ales—and being an Englishman, I may be permitted to make the remark—contain in addition a quantity of Indian berry, or *cocculus indicus*, one of the most deleterious and poisonous drugs known to the materia medica. The sleep produced by it is more lethargic and prostrating than that resulting from opium. I know of nothing more stupid, degrading and loathsome than a man who has made himself drunk on beer rendered bitter by the infusion of *cocculus indicus*. I have tasted lager beer in this city which was manifestly adulterated with this stupefying poison, and it would be an invaluable service to the community if the honest brewers who never employ it could be universally made known.

[Would it not be better to make notorious those who do use it?—EDS.

ONE CHERRY TREE YIELDING $100 A YEAR.

Dr. Trimble exhibited some cherries of the Bigareau Doula variety, a large and very early kind, and stated that one of his neighbors at Newark, N. J., had sold $100 worth from a single tree this season.

THE BEST STRAWBERRY.

Mr. Carpenter presented a plate of strawberries of the Horticulturist variety, which he pronounced the best variety of strawberry yet produced. He said that he has now in cultivation about seventy varieties, and has probably tried as many more which he has abandoned. He would recommend for cultivation not more than six varieties. The Wilson we still hold on upon, as well as the Triomphe de Gand, though they will probably both be abandoned. The Buffalo, Russell's Prolific, Downer's Prolific, and French Seedling are our best varieties next to the Horticulturist. Downer's prolific is excellent for home use though too soft for market, and the French Seedling is the best early variety.

MISCELLANEOUS SUMMARY.

AT the first *conversazione* of the Bradford Philosophical Society, which took place recently, there was a good display of microscopes, stereoscopes, mechanical models, and other objects of interest; but attention was chiefly directed to a steam carriage, constructed by Mr. C. H. Holt, engineer, of Huddersfield. This vehicle will hold eight persons, exclusive of stoker and driver, and, being provided with apparatus for consuming the smoke and condensing the steam, has no unslightly funnel. It is estimated that it will travel over an ordinary highway at a speed of from ten to twelve miles an hour, and that I cwt. of coke, with 50 gallons of water, will supply sufficient motive power for a journey of 20 miles.

A NEW GREEN PAINT.—A mode of obtaining a green pigment from manganate of baryta has been patented by Mr. Ludwig Schad, of Cassell, Germany he proposes to call the pigment Cassell green. He heats a mixture of oxides or salts of manganese and nitrate of barium, sulphate of barium or China-clay being added to prevent fusion. He uses (say) oxide of manganese, 14 parts; nitrate of barium, 80 parts; sulphate of barium, 6 parts; or nitrate of manganese, 24 parts; nitrate of barium, 46 parts; sulphate of barium, 30 parts. The mixtures are heated until they assume a uniform green color. The product is ground with water to the required fineness. The pigment may be used for staining papers, as an oil color, for calico printing, etc.

THE Academy of Sciences has received from M. Seguier an account of a cartridge he has invented, which he considers to have many recommendations. He puts into a metallic case a certain amount of gun-cotton, and on this he places a perforated wad. Upon this wad he puts the coarse-grained powder, and now the projectile, which rests upon the powder. By a peculiar contrivance, something like that of the Prussian needle gun, the powder is first ignited, and then the gun-cotton.

KEROSENE FOR SQUASH BUGS.—A writer in an exchange says:—"I took some of the oil and with a feather passed it lightly over and under the plants, sufficiently to diffuse the odor among them; then took up a position, at a suitable distance, to observe the result, and I soon discovered that the operation was a complete success; the bugs would light down on the plants and immediately fly off. I passed through all my vines twice in two days with the feather, giving the hills a general odor, and the bugs troubled me no more."

WONDERS OF NATURE REVEALED.—Mr. W. J. Tait, corner of Greenwich and Cortland streets, has shown us a series of photographs of natural objects which are very interesting and instructive. They are photographs of a fly's foot, bee's sting, trunk of a butterfly, fly's eye, of a louse, a spider's foot, and similar things, as they appear when greatly magnified by an achromatic microscope. Much information can be obtained by examining these cards; they are also a suitable ornament for the center table.

PAPER PIPE.—The Portage (Lake Superior) *Mining Gazette*, says that paper pipes, six inches in diameter, are used in the Pewabic copper mine to convey air from one portion of the mine to the other. The pipe is six inches inside diameter, the paper pipes are quite strong and can be joined perfectly air-tight by a strip of canvass and a coating of tar.

ON the site of Sodom and Gomorrah, English enterprise has established a factory for the extracting of bromides from the waters.

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Improved Hay Rake.

Farmers appreciate the value of the horse rake, and there are but few places in the country where they are not in use. Many claimants for public favor are in the market, and we herewith illustrate another variety which has some excellent points.

It is necessary that a rake should be light as well as strong, and this object is attained in this rake. By the method of constructing the teeth they are much more durable than the solid ones, being stronger for a given amount of wood, and also lighter.

Fig. 1.

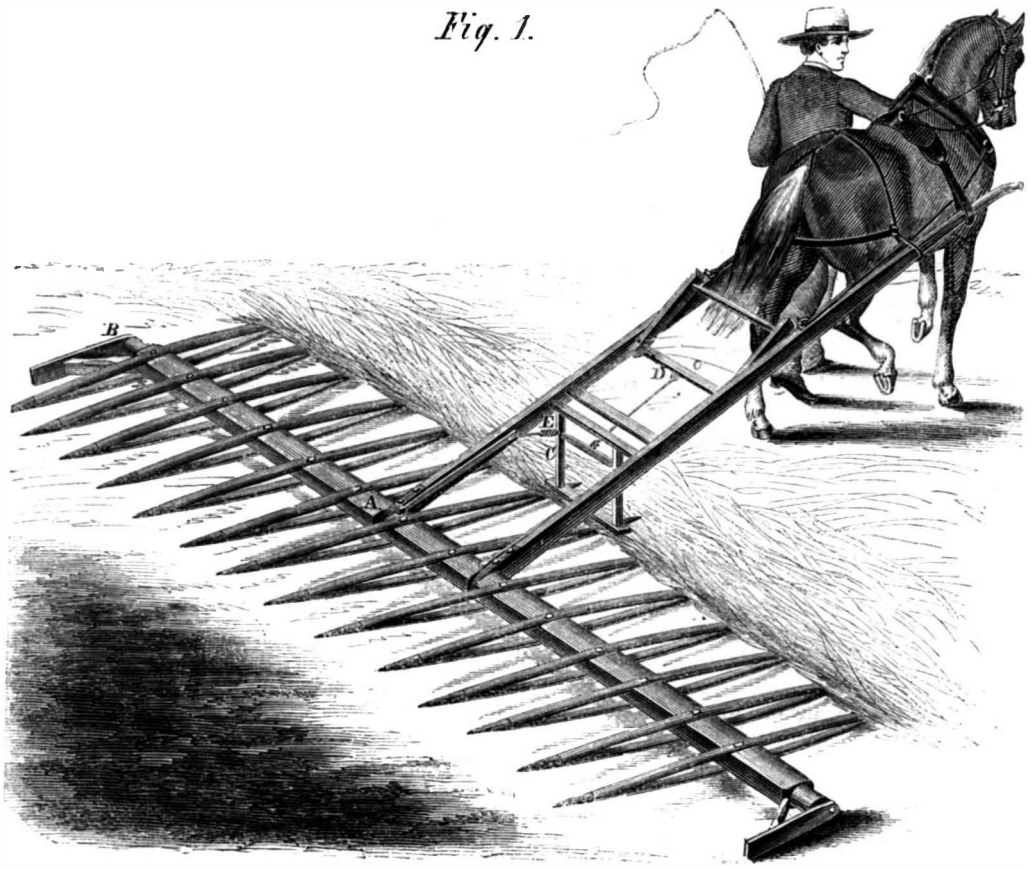
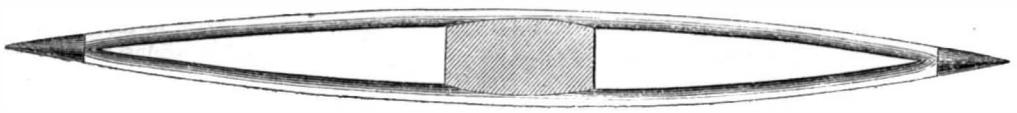


Fig. 2.



CRELLIN'S HAY RAKE.

The machine is constructed as follows:

The rake head, A, is carried in bearings as usual, in which it turns easily, and has at each extremity a projecting support, B, which keeps the weight off the teeth, and guards them from injury against strain sidewise. The device for discharging the load is also novel. It consists of a frame, C, attached to the thills, bearing on the two middle teeth; this frame works on a hinge and is connected to a secondary frame, D, by a cord; when this secondary frame is moved toward the rake the teeth are liberated in a manner easily understood by referring to the engraving. The frame is brought back to its position by a spring, E.

By the method of drawing this rake a large quantity of hay can be taken upon it, and in the construction of the teeth strength and lightness are secured. These are favorable features which will no doubt give this rake popularity. A section of the tooth is shown in fig. 2; the ends are armed with iron.

This rake was patented through the Scientific American Patent Agency, May 16, 1865, by J. Crellin; for rights in Massachusetts, Connecticut, New York, Indiana, Michigan, Minnesota, Iowa, and Kansas, address the inventor at Marshalltown, Iowa. For Maine, New Hampshire, Vermont, Pennsylvania, Ohio, Wisconsin, Illinois, Missouri, address Z. Dixon, Bristol, Illinois.

THE English system of announcing storms by telegraph has been adopted in Prussia. Professor Dove, the famous meteorologist, will send the result of his observations daily to all the principal ports.

New Gas for Motive Engines.

The Motor Lenoir has achieved considerable success, but its application is limited to the supply and cost of the gas required to work it; and it is said that an engineer of Lyons, M. Million, has hit upon an expedient which is likely to have a great effect in extending the use of that or other motors in which power is obtained by the explosion of mixed gases.

The problem is to find a gaseous mixture which takes fire easily and rapidly, and which can be produced in almost any place at a low cost. This desideratum is believed to have been discovered in the gases which are given out when steam is made to pass over coke in a state of incandescence, or, in other words, in a mixture composed of oxide of carbon and carburetted hydrogen. The subject has been introduced in a lecture at the Sorbonne, and before the Scientific Association of Paris, by MM. Schloesing and Demondesir, the engineers of the tobacco manufactory, and M. Troost, and has attracted considerable attention. In the experiments performed it was shown that when, oxide of carbon alone was introduced into a vertical tube, and fired by a spark from a Ruhmkorf coil introduced at the upper end, a blue flame appeared, and slowly traversed the tube until it reached the bottom; and that the introduction of a small quantity of hydrogen accelerated the combustion, and caused the flame to descend with greater rapidity, This was illustrated by a tube more than 18ft. long. Another experiment showed that, when the explosion was caused in a series of vertical tubes alternately connected together above and below, the flame, when ascending, traversed the tubes more quickly than when descending. The engineers mentioned are now carrying on a series of experiments to ascertain the most economical mixture of these gases with atmosphere air for motive purpose, and success is considered to be almost certain. It must not be forgotten, however, that, although the new system may supply a cheaper and possibly more effective motive power, it will have one drawback that does not attach to the Lenoir motor, which can be used in workshops and other places where it would be impossible or inconvenient to introduce a furnace. As steam will be required to produce the gaseous mixture the new motor will come into direct competition with the steam engine, which the motor Lenoir does not.—*Journal of the Society of Arts.*

LINDSAY'S CHURN DASHER.

"All is not gold that glitters," says the proverb; neither does all cream that goes into the churn come out good butter—indeed making a prime article of this kind is such an achievement that the fame of the maker spreads far and wide. In order to make good butter it is necessary to take great pains to preserve the cream from getting sour and prevent it from being tainted by bad smells. It is also necessary to churn it quickly. The old fashioned dasher churn is still preferred by a great many persons, notwithstanding the variety of new ones in the market, and the illustration here published shows an improvement on it.

The old features are all preserved, and a new motion is given the dasher, which adds very much to its efficiency. This motion is simply a rotary one, so that as the dasher ascends and descends it also revolves right and left, causing a thorough agitation of the contents, and causing the butter to come in a short time. This change is merely in having an iron rod instead of a wooden one, and twisting the rod so that as it is moved up and down the dasher revolves—the orifice the rod moves through is a mortice, not a round hole. The rod does not turn in the hands of the operator, but in the handle; this is fitted with a nut and washer so as to allow it to work easily.

This dasher can be applied to any churn of that class now in use; it is not necessary therefore to put aside the old one, as the dasher rod is the invention, and not the churn itself.

This churn dasher was patented through the Scientific American Patent Company by John B. Lindsay, April 25, 1865; for further information address him at Davenport, Iowa.

PRESENCE OF MIND.—Two young men on board the steamer St. John, from New York for Albany, set a good example by their presence of mind and cool determination the other night. A kerosene lamp broke in a closet, and the burning fluid covered the floor. Intense alarm, of course, ensued, but the young fellows stood at the door, and refused to allow even the officers of the boat to enter until the kerosene was burned out. The theory was that if the door was opened and water poured in the flames would not be extinguished, but would be floated to other combustible material at the risk of the destruction of all.

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VOL. XII. NO. 26...[NEW SERIES.]....*Twentieth Year.*

NEW YORK, SATURDAY, JUNE 24, 1865.

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A WORD ABOUT OURSELVES.

Probably no other journal in the United States has received more "honorable mention" from the press of the country than the SCIENTIFIC AMERICAN—while it is equally true that this is the only truly successful and reliable journal of the industrial arts and sciences ever undertaken here. We do not often transfer to our columns the complimentary notices which are so freely bestowed upon this journal, but we cannot forbear to insert the following which we clip from the *Buffalo Advocate*:—

"Of late we have received papers which appeared to us to have been set afloat to rival the SCIENTIFIC AMERICAN, published in New York, by Messrs. Munn and Company. We have no disposition to discourage any lawful enterprise, especially in the making of papers, but it does appear to us to be as weak, as it is foolish, for any one to attempt or even think of bringing out a paper that will at all compare with the one noticed above. The proprietors of the AMERICAN are working, enterprising men, and are in possession of facilities for making a first class paper which others could not attain in a score of years. Besides, the polish, beauty, and exquisite taste which marks the appearance of each successive issue of the paper, must be attended with a great outlay, which no new enterprise could afford to expend. To our citizens, and to all, we recommend the SCIENTIFIC AMERICAN."

So far as other journals are concerned we can only remark with Uncle Toby, in Tristam Shandy, "the world is wide enough for me and thee." Our business is to pursue the even tenor of our way. As in the past, so in the future, we shall devote all our energies to the interests of our thousands of generous readers and patrons the world over. The SCIENTIFIC AMERICAN circulates in every country on the globe, and is generally acknowledged to be the best popular exposiier of the arts and sciences now extant.

The present volume closes with this number. Some of our friends' subscriptions close with it, and as our rule is not to thrust the paper upon those who may not desire to take it, we invariably discontinue sending it whenever the subscription expires. We not only hope that all our subscribers will promptly renew, but we trust also that they will be able to induce some of their neighbors to join with them.

THE PATENT AGENCY DEPARTMENT connected with this journal is unquestionably the most complete and extensive in the world. For nearly twenty years it has been our privilege to be associated with mechanics, inventors, and manufacturers as counsel for them in the prosecution of claims before the Patent Office.

From a very modest beginning we have gradually enlarged our operations, until they have come to include almost one half the entire business transacted with the Patent Office. Ours is the only patent agency in existence that has a co-operating branch office in Washington through which preliminary examinations are made, and personal supervision given to all such cases as may require it.

In our LEGAL DEPARTMENT attention is given to all matters of litigation affecting the rights of patentees—such as bringing suits for infringement, contesting interferences, prosecuting extensions, preparing all legal documents and papers—indeed there is no branch of the patent business which does not receive our most careful attention. Popular opinion as well as attested facts place the SCIENTIFIC AMERICAN Patent Agency Offices as the first in the world.

WHERE TO LOOK FOR PETROLEUM.

A man is sinking a well for petroleum about two miles west of Mount Vernon, in Westchester County, near this city, and has penetrated some 80 feet below the surface. The rocks in this locality are of the taconic formation, which is many thousand feet below any of the oil-bearing rocks. There is no spot on the face of the earth where a well could be sunk with less chance of finding petroleum, while there are thousands of square miles of the oil-bearing formations that have not yet been explored.

We have now in the hands of the engraver a diagram illustrating the position of the rocks in the great basin where petroleum is found, and this will be accompanied by Dr. Stevens's description of the rocks, of their position and location, and of the manner in which they were deposited, all so plain that it will be understood by any one who knows nothing of geology. Indeed, the article will give a better idea of the general position and formation of the rocks which constitute the earth's crust than can be found elsewhere in so few words; and it will indicate clearly the localities in which wells may be sunk with any hope of success. The diagram and description will appear in our next issue probably; if not, the week after.

THE WAR ENDED.

Few people realize the inestimable blessings they possess in the close of the war. They miss the accustomed accounts of engagements, and the sight of soldiers in the streets is becoming rare. Flags no longer wave from every house top. The bands that paraded and the regiments that marched away to the front, these are all among the scenes that were. There are no more dreadful battle-fields, no sewing-circles for the soldiers, and few boxes to be forwarded. The foundries have done their work; shot and shell are no longer turned out by the tun, but, figuratively speaking, the iron for them is cast into plowshares, and the sword has been beaten into the pruning-hook. The shipyards are busy on their contracts for merchants, the armories are disbanding their forces, the makers of ordnance are unemployed, and the whole tenor and tone of our daily lives is as suddenly tranformed from one of eager and vigilant activity for our national existence as if we had dropped from one sphere to another.

Perhaps the most striking transformation visible in the external appearance of this city is that of the Park, opposite our office. But a few months ago it was full of troops, armed and equipped as the law directs; and cannon, tents, recruiting booths, and bands were too common to attract more than a passing glance. These have all vanished, and where the armed men congregated grass is growing vigorously. Welcome, peace! And happy America that has lived through the schisms and schemes that sought to destroy her.

THE MOST PLAUSIBLE PLAN FOR NAVIGATING BALLOONS.

We have before us a large lithograph print, neatly framed and glazed, with this note at the bottom:

"THE AEREON,

or Air Ship, invented and constructed by Solomon Andrews, M. D., of Perth Amboy, New Jersey, in which he sailed against the wind at the rate of 25 miles an hour; not daring to risk a greater speed until the strength of the material, to meet resistance, was proved. The engraving shows the *Aereon* as she appeared on the 4th of September, 1863, in his fifth and last entertainment, when she traveled 30 miles in 14½ minutes or at the rate of 124 miles per hour, in a spiral circle upwards, when she was lost to view in the clouds. Though hundreds of persons were present when she started, and thousands witnessed the flight, yet no one discovered the means by which she was propelled. She was afterwards destroyed by order of the inventor. The cylinders were made of varnished linen, each one 80 feet long and 13 feet diameter. They contain 26,000 feet of hydrogen gas. She carried up the aeronaut weighing 172 lbs., and 256 lbs. of ballast. Car 12 feet long. What is the motive power, and by what means is the power applied?"

The engravings represent three cigar-shaped balloons lashed together side by side, with a rudder at one end, and the car containing the aeronaut suspended below. In the ascending views the balloon is inclined with the forward end upward, and in the descending views with the forward end downward. This makes the solution of the puzzle sufficiently obvious.

It is well known that the vertical position of balloons is under control; to make them rise it is only necessary to throw out ballast, and to make them descend to permit an escape of gas. Mr. Andrews makes a broad, flat balloon, and having pointed it in the direction in which he wishes to go, stands while it is ascending in the rear end of his car so as to incline the forward end of the balloon upward, when the resistance of the air against the upper side of the balloon causes it to glide forward as it rises. Having risen as high as possible, the aeronaut discharges a quantity of gas, causing the balloon to descend, and at the same time steps to the forward end of the car, thus tipping the balloon with the forward end downward, when the pressure of the air against the lower side during its descent causes the balloon to shoot forward in the same direction as during the ascent. The balloon thus being driven by the force of gravity through the air, it will, of course, be obedient to its rudder, and its course may be governed at will.

This is the only even plausible plan that has ever been suggested for navigating balloons, and it is certainly very ingenious. In regard to the statement, however, that the *Aereon* sailed against the wind at the rate of 25 miles an hour, it would be satisfactory to know by whom and by what methods the velocity was measured, and what was the force of the wind against which it sailed.

LEATHER BELTS.

Since publishing an article on leather bands for driving machines we have been in receipt of many letters; one of them we shall publish next week.

We are obliged for this letter and for others on this subject received but not published. The difficulty alluded to in our article of estimating exactly what power is transmitted by a belt is not solved by our correspondent's communication, although he gives so much that is interesting, and is a thinking man. He assumes that the belt (rule 1st,) gives or transmits 22½ H P, but is this an inferences or the result of actual experiment, or practice, which is better? A belt transmitting 22½ H P will have to raise 742,500 lbs. at the rate of one foot high in a minute, and that the force exerted is materially changed by the conditions the belt works under is very certain from the data furnished by Mr. Cooper.

A 12-inch belt running on a 5½-foot pulley at 45 revolutions per minute would be very slack not to transmit more than 12-horse power. We know of an 11-inch belt that daily transmits, from a 4-foot pulley running 60 per minute, the power exerted by an 11-inch cylinder and 30-inch stroke running 45 revolutions per minute with 50 pounds of steam. In this comparison the advantage is with the 5½-foot pulley, for the speed of the belt over it, in lineal feet, is 780, while the smaller pulley runs 753 feet per minute. The power thus carried off by this belt (vertical) without an idler pulley is, by the rule for estimating the powers of steam engines, 29-horse power.

Let it be understood that we do not criticise our

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correspondent's letter in a spirit of fault-finding, but with a view to further information in the case.

On page 84, Vol. III., of the SCIENTIFIC AMERICAN, we published some interesting rules and facts relating to the transmission of power by belts, and the opinion is there expressed that but little reliance can be placed on rules in general, for so much depends on the elasticity, length of belt, and velocity of the same, that arbitrary formulæ do not always suit the case. We are not of this opinion now, and see no reason why, when the length and width of the belt is given, we should not have an approximately correct result, with the ordinary tension, that is a stretching that that will neither tear out the lacing, or the holes, or heat the shaft, but be sufficient to cause a moderate and proper adhesion. Of course, in this case, common sense must be used to determine what reasonable tension means.

As our correspondent remarks, the experiments with the india-rubber and the leather belts proved nothing. Mere adhesion of two surfaces, or one slipping under a less load than the other, with the same width, is no criterion, for by applying foreign substances, such as rosin or oil and rosin, the adhesion can be greatly increased, and a small belt made for the time to draw as much as one of greater sectional area.

We shall be glad to receive further communications on this subject, and thank Mr. Cooper for his promptness in responding to our request.

ISSUED FROM THE UNITED STATES PATENT-OFFICE

FOR THE WEEK ENDING JUNE 13, 1865.

Reported Officially for the Scientific American.

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

48,144.—Air-tight Stove.—Joshua G. Allen, Philadelphia, Pa.:

I claim inclosing the air-tight chamber forming the base of a sheet-iron stove in a case of cast iron, substantially in the manner and for the purpose set forth.

48,145.—Grain Drill.—James B. Amos, Lower Chanceford, Pa.:

I claim, First, Connecting the forward wheels, when mounted upon one and the same axle, to the truck or frame by means of a central vertical pin, in combination with side links attached to either side of the frame or truck and to the axle next to the wheels, so as to diverge, inclining forward and downward, from the truck to the axle, substantially in the manner and for the purpose set forth.

Second, In combination with the cup slide valves, I claim stationary cleaning blades penetrating a longitudinal slot in the valve-bar traversing the cups, substantially as set forth.

Third, In combination with the operating the slide valves, I claim the means herein described of enlarging or diminishing the diameter of the said wheel, in the manner and for the purpose herein set forth.

48,146.—Caster for Furniture.—Marshall L. Babb, Cape Elizabeth, Me.:

I claim as my improvement the slotted and bulbons-headed spindle, c c, in combination with the cylinder, b.

48,147.—Stuffing Box for Valve Spindles.—Thomas and John Barber, Brooklyn, N. Y.:

We claim the combination with the annular valve, E, socket, B, and valve stem, D of the gland, A, and collar, A', when constructed and arranged to operate in the manner and for the purposes herein set forth.

Second, We also claim the combination of the guides or snugs, a a, on the collar, A', with the straight sides of the valve spindle, substantially as above described.

Third, We also claim the lubricating device above shown, and its channel, d, in combination with the socket in which the valve-spindle works, substantially as described.

[This invention consists in an improvement in stuffing boxes for spindles of valves, by which one is enabled to dispense with the system of packing stuffing boxes with hemp or similar stuffing material, and yet make the joint tight.]

48,148.—Paper Collar.—William S. Bell, Boston, Mass.:

I claim, First, Doubling the thickness of the band, and connecting the folds together, substantially in the manner set forth.

Second, Folding the collar upon the line, b, by making the edge, a, the guide in such operation.

48,149.—Machine for Coring, Slicing, and Stringing Apples.—Noah Bennett, Sherman, N. Y.:

I claim the combination and arrangement of the piston or flower raised by a spring, and composed of a driving head, g, core-depressing projection, h, and centering point, i, with the cutting, coring, and stringing device, all substantially as herein specified.

48,150.—Corn Planter.—William Blessing, Jeffersonville, Ohio:

I claim, First, The tooth, C D, and seed box, F f, secured to each other and to the beam by the operation of a single screw, substantially as set forth.

Second, The obliquely-floored seed box, F, connected to the tooth by the oblique boss, f, and having its slide reciprocated in the plane of the trigger, substantially as set forth.

48,151.—Baling Press.—Charles B. Brooks, Auburn, Me.:

I claim the wheel, G, on the upper end of the screw, E, in combination with the friction wheels, H H, when the latter are placed in an adjustable loaded frame, and rotated in reverse directions from a shaft, K, driven alternately by a straight and cross belt, and all arranged substantially as and for the purpose set forth.

[This invention relates to an improvement in the screw press for baling purposes, and it consists in a novel manner of operating or applying power to the screw through the medium of friction, whereby several advantages are attained over the mode of applying power.]

48,152.—Show Case for Cigars and Tobacco.—Charles E. Brown, Owego, N. Y.:

I claim a show case for cigars and tobacco, constructed substantially as herein shown and described.

[This invention consists in arranging a series of compartments in a circular or polygonal case, having a glass top or cover, in such manner that each compartment may be brought underneath a door in the top or covering thereof, for the purpose of enabling the party purchasing to select the particular priced or kind of cigar he desires, the said price or name being denoted on a plate conveniently arranged in the center of the case, and revolving with the compartments. It also consists in arranging the door in the top in such a manner as to prevent its being opened by any person except the vender of the articles in the case.]

48,153.—Method of Attaching Loops to Buckles, Etc.—L. C. Chase, Boston, Mass.:

First, I claim confining buckles, loops and rings to straps by means of a clasp or band, substantially as and for the objects specified.

Second, Constructing the clasp or band in one piece with the loop, substantially as and for the purpose described.

Third, The prong, f, in combination with the clasp, substantially as set forth and for the purpose described.

Fourth, Constructing one side of the clasp opposite the prong f, in two parts, substantially as and for the purpose described.

48,154.—Shuttle for Looms.—John H. Coburn, Lowell, Mass.:

I claim securing the tip of the shuttle by means of its screw-threaded shank, b, which screws through the transverse plug, c, substantially as above described.

[This invention consists in a method of securing the tips of shuttles so that they may sustain the violent blows and shocks given to them in weaving without becoming loose and falling out, and whereby also the shuttle will be strengthened and prevented from being split.]

48,155.—Improvement for Distributing Fertilizers to Growing Plants.—Daniel C. Colby, Claremont, N.H.:

I claim the combination of the inclined button, B, the stay, g, the temporary partition, J, and the standard, E, with the box, A, as and for the purposes set forth

48,156.—Flour Sifter.—Daniel C. Colby, Claremont, N.H.:

I claim the arrangement of two or more strips, E E, upon the underside the side of the bar, D, substantially as described, and the combination of the said bar, D, and the cross piece, F, as and for the purposes set forth.

48,157.—Machine for Making Clinch Rings.—J. A. Coleman, Providence, L. I.:

I claim the method of forming "clinch rings," or other similar articles, by the use of a pin, in combination with a die, both acting in the manner substantially as and for the purpose set forth.

48,158.—Low Water Detector.—John Cosfeldt, Philadelphia, Pa.:

First, I claim the tube, A, or its equivalent, forming a passage between the interior of the boiler and the pipe, B, through which the end of the float lever, H, or equivalent device connected to and operating the valve, E, may project into the boiler, substantially as specified.

Second, The alarm whistle, G, and the valve, E, gage cock, C, blow off cock, Y, and float lever, H, combined with the four-way pipe, B, substantially as set forth, for the purpose described.

48,159.—Wool Press.—John Crane, Glover, Vt.:

I claim as my invention the machine or combination substantially as described, the same consisting of the hinged boards, D D, and their supporting frame, and the grooved slides, F F, and standards, E E, and their operative mechanism as described.

I also claim the above-described arrangement of the hinged boards, their supporting frame, and the grooved slides, F F, and standards, and their operating mechanism.

I also claim the combination of the sliders, G G, with the grooved standards, E E, and sides, F F, when combined with the hinged boards, D D, and the mechanism for operating the slides, F F, as specified.

48,160.—Mode for Making Corundum Wheels.—Elijah H. Danforth, Jamestown, N. Y.:

I claim their (the base, A, on the curb, B, etc.) combination as set forth and described, and represented in Fig. 1, a perspective view.

48,161.—Scroll Sawing Machine.—William H. Doane, Cincinnati, Ohio:

First, I claim connecting the pitman, D, to the upper end of a scroll saw stock by means of the conical bearing, b, on the end of the slide, a', and a bolt, c, passing through the stock, substantially in the manner and for the purpose described.

Second, The combined conical wrist pin and slide, a b, formed on or attached to the saw stock, substantially as described.

Third, The hollow cylindrical stock, E, in combination with a combined wrist, pin and slide, which works in guides at the back of the stock, substantially as and for the purpose described.

Fourth, The arrangement of the back and side guides, n n', on a plate, k, attached to the table, b, substantially as described.

48,162.—Tobacco Pipe.—F. Doellbor, Philadelphia, Pa.:

I claim the elbow, D, provided with a socket, d, and made to fit in the lateral socket, b, of the fluid receptacle of a smoking pipe, substantially as and for the purpose set forth.

[An engraving and description of this invention will be published in the SCIENTIFIC AMERICAN in a few weeks.]

48,163.—Whiffletree.—James Elder, Carthage, Ill.:

I claim the combination of the adjustable lever, G, lever, J, and rod, K, with the treble tree, D, for equalizing the draft upon the horses of the team, substantially as described.

48,164.—Sheet-metal Spoon.—James Fallows, Philadelphia, Pa.:

I claim a sheet-iron or tin-plate spoon or fork, having a hollow hollow handle, constructed and finished substantially in the manner described, as an improved article of manufacture.

48,165.—Pump.—A. D. Foster, Jordan, N. Y.:

I claim the combination and relative arrangement of the valves, v and v', when rigidly attached to the pivoted lever, G, with the hollow piston, P, having a head composed of the plates, B and C, between which is arranged the disk valve, D, which is constructed and operates conjointly with the other parts in the manner shown and for the purpose described.

48,166.—Steam Regulator Valve.—George H. Fox, Boston, Mass.:

I claim the combination of the valve, e, diaphragm, i, and inlet and outlet chambers when arranged to operate together and with reference to each other, substantially as set forth.

48,167.—Concussion Fuse for Explosive Shells.—George P. Gauster, New York City:

I claim the use of two cones, C and D, operating in a double coned chamber, substantially as shown and described.

43,168.—Head for Barrels.—Lewis S. Gilliland, Dayton, Ohio:

I claim, First, The removable barrel head with adjustable segments arranged and operated so as to be lessened and enlarged in circumference, for the purpose of being placed into and out of the croze of barrels or casks without moving any of the hoops thereon, constructed as described.

Second, I claim the arrangement and use of either the lever ratchet or the holder and thumb screws or their equivalents for the purpose of forcing and holding the outer edge of the head into the croze of the cask, substantially as herein set forth.

Third, I claim as a new article of manufacture the metallic segments, G D B, with the lever, B', the said article being adapted for attachment to and operation with a barrel head in the manner and for the purpose herein explained.

48,169.—Wagon Brake.—Willis Glaze, Rochester, Ind.:

I claim, First, The connecting of the whiffle trees, Q, to a bar, o, pivoted to a rod, c, which is connected with the lever, J, for the purpose of relieving the rear wheels of the pressure of the shoes, G, under the pull of the team, as set forth.

Second, The arrangement of the slide, K, fitted in the guide plate, L, lever, J, and rods, c M, and thimble, N, all aaranged to operate in connection with the levers, E E, substantially as and for the purpose specified.

Third, The combination of the levers, E E, rod, I, lever, J, rod, c, slide, K, rod, M, and thimble, N, with the bar, O, connected by rods, P P, to the whiffle trees, Q Q, for the purpose set forth.

[This invention relates to a new and improved self-acting brake for wagons, and it consists in a novel arangement of parts, whereby a very simple brake of the kind specified is obtained and one which may be applied at a moderate expense.]

48,170.—Oil Ejectors.—Wm. R. Greenleaf, Buffalo, N. Y.:

I claim the combination of the ejector or ejectors, C, or equivalent, with one, two, three or more compartments or chambers, A, for the purpose and substantially as described.

48,171.—Flower Basket.—G. Gunther, New York City:

I claim a flower basket, A, with a detachable bottom, made substantially as set forth.

[This invention consists in a flower basket with a detachable cup or bottom in such a manner that water or other impurities accumulating in the lower part of the basket can be readily and easily removed without injuring the root of the plant or plants growing in said basket.]

48,172.—Filter for Oils, Etc.—Phillip Halle, Philadelphia, Pa.:

I claim, First, A filter for purifying oils, consisting of a close chamber having a perforated diaphragm top and a diaphragm bottom composed of a number of conical tubes fitted with raw cotton, substantially in the manner described.

Second, The use of raw cotton in conical tubes, substantially in the manner and for the purpose set forth.

Third, The combination of a series of two or more filters, constructed substantially in the manner described for the purposes set forth.

Fourth, The combination of one or more filters constructed substantially in the manner described with a heating or refrigerating vessel, constructed and arranged substantially in the manner described for the purposes set forth.

48,173.—Ice Scraper.—H. W. Harkness and J. C. Mack, Bristol, Conn.:

We claim as a new article of manufacturing an ice scraper, the bowl or body, a, having an aperture, m, in its bottom, in combination with the knife or scraper, c, pin or screw, i, and handle, n, substantially as and for the purpose described.

48,174.—Machine for Cutting off Cigars.—Conrad and Frederick W. Hoffman, Morrisania, N. Y.:

We claim, First, The hinged trough or channel plate, C, operated by the knife lever, and arranged in the manner and for the purpose described

Second, We claim the plate, D, operated by a pin, s, fast to the boer, F, in combination with an inclined projection, a, fast to the frame and arranged in the manner and for the purpose set forth.

Third, We claim the movable head piece, E, in combination with the plate, D, as described.

Fourth, We claim, in combination with the plate, D, the index ratchet wheel, H, arranged and operated in the manner and for the purpose substantially as set forth and described.

Fifth, We claim the combination of the marble table, B, trough, C, plate, D, knife lever, F, and index wheel, H, when arranged and operating together in the manner and for the purpose substantially as set forth and described.

48,175.—Machine for Gathering and Loading Stone, Hay, Etc.—George W. Holley, Niagara, N. Y.:

First, I claim operating devices for elevating hay, stone, or substances of any kind, by means of a backward or retrograde move of the horses.

Second, I claim the use of two tongues to one wagon, as described, to permit the same to be drawn forward as usual and adapt the motion of the horses in backing to be transmitted to elevating devices, substantially as set forth.

Third, I claim the slot, h, in the lower tongue, H, in combination with the evener, P, and cord, Q, the whole being employed in the manner and for the purpose stated herein.

Fourth, In a machine herein constructed as herein described, I claim the combination of the movable rack frame, J J1 J2 the cog wheels, G G, the pinion, O, and the shaft, F, the whole being constructed and arranged to operate in the manner and for the purpose explained.

Fifth, I claim the lever, S, in combination with the clutch, T, when employed to enable the attendant to assist in elevating the hay or stone, as set forth.

Sixth, I claim the neck yoke, R, employed to attach the upper tongue, H', to the horses, so as to cause said tongue to undergo the backward movement of the horses as and for the object specified.

48,176.—Match Splint Cards.—Bennet Hotchkiss, New Haven, Conn.:

I claim, as a new device of manufacture, making the cards of match splints, substantially as herein described and set forth.

48,177.—Chair.—James A. and Henry A. House, Bridgeport, Conn.:

We claim the combination of reel, R, bolt, D, spring, x, and cords, T, operating together, substantially as and for the purpose specified.

48,178.—Boy's Sleds.—David G. Hussey, Nantucket, Mass.:

I claim the constructing or forming of the sled of a plurality of parts attached respectively to the separate frame pieces, a and a', a ternately arranged in one plane as represented in the drawings so as to constitute a level floor or bed and in such a manner, that said parts may be extended in a greater or less degree to increase the capacity of the sled as may be required

Second, The combination of the pivoted steering frame, E, mounted on a pair of runners, C C, and the levers, F and H, constructed, arranged and operating as described in connection with levers, I, or equivalent means for actuating the lever, H.

Third, The combination of the sliding foot piece, L K and k, and elastic brake teeth, h h, all constructed, arranged and operating substantially as and for the purpose set forth.

48,179.—Horse Rake.—David G. Hussey, Nantucket, Mass.:

I claim the curved arms, b, provided with two or more sockets, c, and teeth, d, inserted therein, substantially as described.

[This invention relates to a new and improved mode of forming or constructing the rake heads and in the means employed for operating, raising and lowering the same, so that the rake may be kept perfectly to its work, in order to gather or rake up a load and readily adjusted in order to discharge the same.

48,180.—Radiating Attachment for Stoves and Furnaces.—Jacob B. Hyzer, Janesville, Wis.:

I claim, First, The combination of the flue, g, and damper, h, with the flue, g', and central smoke pipe, D, substantially as and for the purpose set forth.

Second, The combination of the outer and inner radiating cylinders, G and O, and the radial plates, f f' and f'', producing ascending and descending flues, with the inner unconfined hot-air space, c; ventilated above and below, substantially as and for the purpose set forth.

Third, The combination of the flue, L, cylinders, G and O, and radial plates, f f' f'', with the flues, g', damper, h, smoke pipe, D, and inner unconfined hot-air space, C', when constructed and arranged substantially as and for the purpose set forth.

48,181.—Wood Bending Machine.—Samuel Keeler, Lancaster, Pa.

I claim the arrangement and combination of the devices, C D E H L M and N, as herein described, and for the purposes set forth.

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48,182.—Churn.—R. Keese, Cardington, Ohio:

I claim the rotating winged beaters, L, cross arms or beaters, h, in combination with the sweep, f, when arranged and operating as and for the purpose set forth.

48,183.—Clothes Dryer:—D. J. Kellogg, Rochester N. Y.:

I claim the stop and retaining flanges, r g, in combination with the bracket, A, and clothes bars, B, substantially as herein specified.

48,184.—Stove Pipe Drum.—Werner Kroeger, Milwaukee, Wis.:

I claim the cylinder, A, provided with the two internal cylinders, E E', having long and short plates, c c' d d', attached to their exterior surfaces and having disks, F G, at their ends provided with openings, a e, all arranged substantially as shown with the dampers, G K, to operate substantially as and for the purpose set forth.

[This invention relates to a new and improved heat radiator designed more especially for stove pipes to arrest the heat passing through the same and radiate it into the apartment so that it cannot escape into the flue with the products of combustion.]

48,185.—Planing Machine.—Henry A. Lee, Worcester, Mass.:

I claim, First, The combination with the horizontal cutter cylinder of a molding machine of an adjustable automatic pressure stand whereby the pressure of the shoe upon the stuff remains the same whether the stand is removed to or from the cylinder, substantially as and for the purposes stated.

Second, The combination with the adjustable stand, L, of pressure bar, I, screw shaft, P, and weighted levers, P, substantially as and for the purposes specified.

Third, In combination with the adjustable pressure bars, K, the adjusting screws, P, and screw, nuts, m, operating against the rounded ends of the bar, C, as and for the purpose specified.

Fourth, In combination with the stand, M, the slotted flanges, d, when secured to the standard, T, of the cutter cylinder, D, to make it adjustable thereon as and for the purposes specified.

Fifth, In combination with the cutter cylinder, E, working under the bed, B, the adjustable mouth piece, p, in the bed plate, by which moldings can be cut on the lower corners of the stuff, while the sides and face are worked as herein shown and described.

48,186.—Leather Dressing Machine.—Richard Lee, Newark, N. J.:

I claim the rolls or rubbers with their semicircles, tilt springs and spring bearings constructed in the manner and for the purpose specified, the manner of alternating the action of the table, substantially as shown, and the whole machine with the various parts combined, arranged and operated in the manner and for the purpose herein above set forth.

48,187.—Incendiary Compound.—H. W. Libbey, Cleveland, Ohio:

I claim an incendiary compound composed of the ingredients herein named and compounded in the manner substantially as herein specified and set forth.

48,188.—Ladies' Boot.—H. Libby, Evansville, Wis.:

I claim a boot for ladies and misses use, made with a heel piece, d, and extensions r r, constructed substantially in the manner herein shown and described.

[This invention relates to a novel improvement in ladies' or misses' boots, whereby a neat and perfect fitting as well as easy feeling boot to the foot is obtained.]

48,189.—Flour Sifter.—Joseph H. Littlefield, Cambridge, Mass.:

I claim the arrangement and combination of the case, B B C C, sieve, G, the two side pieces, D D, and the equilateral triangular shaft, A, or its equivalent, provided with the grooves, i i i, and the elastic strips, E E E, substantially as described and for the purpose set forth.

48,190.—Egg Cooker.—Wesley Loucks, Schoharie, N. Y.:

I claim the within described egg cooker as a new article of manufacture.

48,191.—Car Seat.—Edwin Lockwood and George W. Pitman, Bordentown, N. Y.:

I claim the seat, B, provided with the adjustable rods, C, arranged substantially as shown, in connection with the reversable back, H, applied to the seat by means of the bars, I G, substantially as and for the purpose specified.

[This invention relates to a new and improved adjustable car seat for sleeping cars, and it consists in constructing and arranging the back and the seat in such a manner that both may be inclined to suit the occupant when desiring to sleep or to be in an inclined position, and both the seat and back rendered capable of being adjusted or reversed, to suit the direction in which the car is running.

48,192.—Grape Box.—O. Mallory, Rochester, N. Y.:

I claim as an improved article of manufacture, a grape box composed of an inflexible, or wooden bottom, B, having a bevelled edge cut under from the face, or inside of the bottom, for the purposes set forth, and being arranged and combined with the straw-board hoop or side, A, in the manner shown and described.

48,193.—Photographic Camera Stand.—Hervy Manger, Philadelphia, Pa.:

I claim in combination with the rigid and main supporting frame of a camera stand the hinged beams, C C H, endless screw shafts, G, and table, C, substantially as and for the purposes specified.

I also claim, in combination with the main supporting frame of a camera stand that hinged beams, B, C, H, endless screw shafts, G, L, and table, E substantially as and for the purposes specified.

I also claim in combination with the adjustable camera stand herein described the adjustable spring supporting rods, P, whether the same are used with or without castor rolls substantially as and for the purposes specified.

48,194.—Fruit Knife and Nut Pick.—George Mayland, Brooklyn, N. Y.:

I claim as an improved article of manufacture a combined fruit knife and nut pick, composed of a fruit blade, C, and nut pick, D, placed in one and the same handle, A, at opposite ends thereof, and arranged relatively with a spring, B, of such form as to act upon both the blade and pick, and admit of the same opening and closing at opposite edges of the handle, substantially as described.

48,195.—Broom Head.—Chas. E. Miller, Cincinnati, Ohio:

I claim, First, Connecting the jaws of a metallic broom head by a detachable or caper hinge or articulation, at the point of the head, or that pulp of the same further from the handle.

Second, In combination with the above, I further claim the sockets, C C, and pintles, c c, when formed upon the ends of arms projecting downward from the lower bars, D D', as and for the purposes specified.

48,196.—Ash Sifter.—Chas. T. Miller, Providence, R. I.:

I claim the combination and arrangement in a coal and ash sifter of the hopper, B, vibrating sieve, G, deflecting board, g, inclined ash board, c, arranged reversely to the sieve, g, and doors, D E and F, substantially as and for the purposes described.

[This invention has for its object to provide a coal and ash sifter, which may be operated with ease, and in the use of which the operator will not be annoyed by the rising of dust and fine ashes, nor will these be permitted to escape into the apartment in which the apparatus is placed.]

48,197.—Hand Corn Planter.—Jacob Morris, Auburn, Missouri:

I claim the employment or use of the rod or bar, H, when used in connection with the two side plates, A A', pivoted together and provided with plates, I I, and also provided respectively with the hopper, E, and the slide, F, substantially as and for the purpose herein set forth.

[This invention relates to a new and improved corn planter of that class which are operated directly by the hand, and it has for its object the obtaining of an implement of the kind specified which will, during the planting operation, scatter the seed so that it will be dropped at suitable distances apart in the hills and admit of the stalks being sufficiently far apart that they will not interfere with each other in growing.]

48,198.—Liniment.—James H. M. Morris, Reading, Ill.:

I claim the liniment composed of the ingredients compounded in the manner and in the proportions herein described.

48,199.—Machine for Pointing Paper Hangings.—Francis S. Munroe, Jr., Grantville, Mass., and Thomas Mason, Boston, Mass.:

We claim the endless series of ink rolls, k, and the tablet, r, when combined and arranged to operate together, and in connection with the inking apparatus and the elastic printing cylinder, c, substantially as set forth.

48,200.—Detachable Oven.—Aaron B. Nott, Fairhaven, Mass.:

I claim the combination and arrangement of the oven, O, the two flues, A G, the induction and eduction pipes, F F', the opening, e, and the dampers, D d d, the whole being substantially as specified.

I also claim, in connection with the oven and its flues, arranged as described, the four ledges, a a a a, arranged and applied to the four sides of the interior of the oven.

I also claim, in connection with the oven and its flues, arranged as described, the boiler openings, f f f f, applied to one end and one side of the outer flue case, for the purpose specified.

48,201.—Magazine Fire-arm.—B. F. Parkinson, Washington, Pa.:

I claim the lowed, removable magazine, B, constructed and operated substantially as described, for the purpose set forth.

Second, The spring pin, a, for releasing the pawl, enabling the arm to be cocked without rotating the cylinder, or rotating the cylinder without the intervention of the hammer or trigger.

48,202.—Pump.—J. Peabody, Dixmont Centre, Maine:

I claim the arrangement of the valve, o, the valve chamber, D, and its discharge passage, b, with the piston, B, and its rod, C, and the pump barrel, its other valves and valve passages, and the eduction passage, L, the whole being substantially as specified.

48,203.—Hydrometer.—Henry Petrie, Chicago, Ill.:

First, I claim the adjustable bottom, 3 and 4, when used for the purposes specified.

Second, A hydrometer with the table, B, attached to the case thereof, substantially as set forth.

48,204.—Sewing Machine.—Louis Planer, New York City:

I claim the combination of the shaft, 12, with its arm, 13, journal piece, 7, arms, 6, and 14, screw, 9, link, 5, arranged and operating together to lift and adjust the presser foot of a sewing machine, substantially as described and for the purposes set forth.

48,205.—Feed-wheel for Sewing Machine.—Louis Planer, New York City:

I claim, First, The combination with the feed-wheel of the slotted link, I', arranged to grasp the feed lever and dog and hold the dog in proper position upon the flange of the wheel without other fastening, substantially as described and specified.

Second, I claim in combination with a feed-wheel, L, lever, M, with its arm, N, slotted link, I', and dog, o, making the apparatus adjustable, substantially as described and specified.

Third, In combination with a feeding mechanism, constructed substantially as described, I claim the rule or scale upon the arm, G, of the rocket shaft, whereby the machine can be readily set to sew any described number of stitches to the inch, substantially as described and specified.

48,206.—Feed-wheel for Sewing Machine.—Louis Planer, New York City:

I claim in combination with feed wheels of a sewing machine the dog, c, lever, a, and arm, b, provided with an adjusting mechanism for regulating the feed, substantially as described and specified.

48,207.—Carriage Wheel.—John Raddin, Lynn, Mass.:

First, I claim the thimble, O, in combination with the screw, N, and elastic packing, M, applied to the spokes and felly of a carriage wheel, substantially as and for the purpose described.

Second, The metallic thimble, P, applied to the felly end of a wooden spoke, in combination with the screw, J, packing, M, thimble, O, and fixed screw, N, substantially as shown in Fig. 3, and for the purpose described.

Third, The fixed screw, J, in a wooden hub, operating in combination with an internal screw cut in the end of a spoke, substantially as and for the purpose described.

Fourth, The socket, W, provided with a clasp entirely surrounding the felly, when used in combination with a spoke rendered adjustable by means of a screw, and the elastic packing, M, substantially as and for the purpose described.

Sixth, The combination of a hollow metallic spoke with a thimble, O, screw, N, and elastic packing, M, substantially as and for the purpose described.

48,208.—Holding and Filling Bags.—George E. Randall, Yaphank, N. Y. Antedated June 6, 1865:

I claim, First, The combination of the two shafts, C C', fitted with pointed pins, c c, and furnished with arms, j and c'', the notched lever, D, and spring, i, substantially as herein described, for the purpose of holding and extending open the mouth of the bag.

Second, The lever, F, bar, E, platform, G, and measure, H, in combination with each other, and with the devices for holding and extending open the mouth of the bag, substantially as herein set forth.

48,209.—Lock.—H. D. Richardson, Florence, Mass.:

I claim a lock, when constructed and arranged substantially in the manner described.

48,210.—Extension Ladder.—John L. Ripley, Fremouth, Ohio:

I claim the combination of the rollers, d and g, plates, e and c, hooks, f, eyes, i, pin, h, with the ladders, A B and C, when constructed and arranged as and for the purposes specified, constituting a combined step and extension ladder.

[This invention consists in a combination of a series of ladders arranged in such a manner that they may be adjusted together and extended with the greatest facility, so as to form a long ladder, to be used against buildings, etc., and be also capable of being adjusted together so as to form an extensive step-ladder when the latter is required.]

48,211.—Spring Balance.—Herman Saloshinsky, New York City:

I claim the combination of platform rod, D, cross bar, B, springs, S and S, rack, m, pinion n, and dial handle, p, when arranged and operating together in the manner and for the purpose substantially as set forth and described.

48,212.—Horse-power.—Gelston Sanford, New York City:

First, I claim the construction, combination and arrangement of the quadruple bearing, e, and bearings, a a' a2 a3, substantially in the manner and for the purposes herein set forth and described.

Second, The center-piece, B, constructed substantially as herein described.

Third, The plate, A, provided with bearings, g and f f, in combination with changeable wheels, L and M, in the manner and for the purposes specified.

Fourth, The hanging shaft, O, and universal joint, P, in combination with the driving shaft of a horse-power, operating substantially as described.

48,213.—Hardening and Tempering Steel.—Elliot Savage and Henry Stratton, West Meriden, Conn.:

We claim the use or employment in hardening steel of metallic solutions, in the manner and for the purpose substantially as set forth.

48,214.—Roller for Trunk.—John Schmadel, Newark, N. J., and John A. Lieb, Essex, N. J.:

We claim the combination of the flexible plate, A, with punched ears, a a, and the roller, B, with solid journals, b b, the whole being constructed and employed in the manner and for the purposes herein specified.

48,215.—Casting Coffin Handles.—Denning W. Sexton, East Hampton, Conn.:

I claim the within-described device, consisting of the triangular mold or drag, 3 3, with the respective hinged copes, constructed substantially as and for the purpose herein described.

48,216.—Grinding Faucets and Valves.—Thomas Shaw, Philadelphia, Pa.:

I claim the employment of a series of mandrels rotating alternately in opposite directions, when constructed, arranged and operated substantially as and for the purpose set forth.

48,217.—Copying Press.—Walter Shriver, New York City:

I claim the method above described for forming the connection between the screw and the platen, by casting the two together, as described, for the purpose set forth.

48,218.—Ejector for Steam Boiler Furnaces.—John N. Snowdon and Henry Wilkins, Brownsville, Pa.:

We claim the combination of the nozzle, A, the nozzle, B', and the nozzle, C', placed concentrically one within the other, the nozzles, B' C', being connected respectively with a steam boiler and with an oil or other reservoir, substantially as above described.

[This invention has for its object to promote combustion in furnaces of steam boilers and other furnaces, and it consists in an apparatus so constructed as to inject oil or water and air by means of and along with a current of steam into a furnace, and thereby promote the more perfect combustion of the gases and products of the fuel.]

48,219.—Submerged Pump.—H. M. Stoker, Watson, Ill.:

I claim, First, In double-acting submerged pumps, the combination of the movable cylinder, C, having inlet valves in both its heads, D D', with the hollow piston rod and hollow piston, the inlet passages of said cylinder being governed by the same annular valve, substantially as described.

Second, I also claim making the hollow piston, H, with solid heads, perforated as shown, and with elastic sides, substantially as above described.

[This invention relates to that class of pumps the cylinder and vaives of which are to be submerged, so as to be protected from the action of frost.]

48,220.—Submerged Pump.—H. M. Stoker, Watson, Ill.

I claim in double-acting submerged pumps, with uncovered piston chambers, making the body or shell of the cylinder of potter's ware, molded in one piece, combined with a valve chamber, B, of metal, constructed and arranged substantially as described.

[This invention relates to that class of submerged pumps, the upper ends of whose cylinder are open, so that the water rests always upon the upper heads of the pistons.

48,221.—Paint for Ships' Bottoms.—James Gamage Tarr and Augustus Henry Wenson, Gloucester, Mass.:

We claim the composition, or a paint, in which metallic zinc forms the basis, and is alloyed or in contact with metals which dissolve less readily in sea water, substantially as set forth herein.

48,222.—Hat.—Daniel K. Albright, Philadelphia, Pa., and Leo H. De Lange, Burlington, N. J.:

We claim enlarging a hat near the brim, so that an annular space may be formed within the enlargement, in the manner and for the purpose specified.

48,223.—Suspended.

48,224.—Coal Breaker.—Philip Umholtz, Tremont, Pa.:

I claim making the toothed roller of the coal breaker, with an occasional row of large teeth set at distant intervals, substantially as and for the purpose described.

48,225.—Horse Fastener.—Felix Vogeli, Newburgh, N. Y.:

I claim, First, The falling shutter, operated by any suitable lifting and lowering apparatus, and furnished with means for attaching animals thereto, substantially as and for the purpose described.

Second, The combination of the surcingle, the fore and aft straps, and the head straps, for attaching the animal securely in a vertical position, irrespective of the devices for prostrating the animal.

Third, The combination of the straps, b b, with the surcingle straps or their equivalents, and the roller, H, by means of which combined devices the animal may be suspended for treatment or discipline.

Fourth, The combination of the straps by which the body of the horse is secured, those pertaining to the hobbling of the feet, and the cross-bar and strap to which a foot is secured for shoeing, etc., forming in this connection a device for the compulsory acquiescence of the animal in the operation of shoeing or other treatment in which such position of the foot or limb is desirable.

48,226.—Apparatus for Separating Metals from Ores.—J. D. Whelpley and Jacob J. Storer, Boston, Mass.:

We claim, First, The separating of metals from mixtures of earth and metal by the application of gravity in counter action to currents of air in an upright pulverizing mill, the air moving upward to carry off the finer dust of earthy matter, while the metal falls by its superior gravity, substantially as described.

Second, The tangential conductor, E, leading from the periphery of the mill, in combination with the pocket, B, or its equivalent, substantially as and for the purpose described.

Third, The shorter pipe, l, within the larger and longer pipe, m, when arranged in reference to the mill, A, and pocket, C, or their equivalent, substantially as set forth and for the purpose described.

Fourth, The employment of a water tank and a draft and spray wheel, substantially as set forth, and for the purpose described.

Fifth, The pipe, F, in combination with the pocket, B, pipes, l m, and pocket, C, substantially as and for the purpose described.

Sixth, The windage post, w, in the pocket, B, substantially as and for the purpose described.

Seventh, The windage post, n, in the pocket, C, substantially as and for the purpose described.

Eighth, The air post, v, in combination with the mill, A, tangential conductor, E, pocket, B, and pipe, F, substantially as and for the purpose described.

Ninth, The valves, k and i, at the top and bottom of the mill to change the direction of the currents of air through the same, substantially as described.

Tenth, The shelves or partitions, t, arranged in the exit or chimney, D, substantially as and for the purpose described.

48,227.—Cartridge Retractor for Breech-loading Fire-arms.—H. H. Wolcott, Yonkers, N. Y.:

I claim the combination of the shell drawer, F, tongue, g, laterally projecting rim, i, and pin, h, all constructed and arranged substantially as and for the purpose set forth.

[This invention consists of a new and improved shell drawer for breech-loading fire-arms, which is operated by means of the swinging of the breech-plate.]

48,228.—Wagon Lock.—John F. Yates, Mooresville, Ind.:

I claim the combination of the tongue, K, the tongue bolt, k, the stop bolt, x, the front rod, N, the lever, M, king bolt, h, brace, O, rear rod, P, the rod bars, g and H, with their connecting pullies, a a, and slides, R R, the hounds, D D, the drop lock, i, with the snake iron, h, all arranged and operating substantially as described, and for the purpose set forth.

48,229.—Corn Planter.—E. M. Wright, Wilmington, Ohio:

I claim the combination and arrangement of the spiral seed-box, D, reversible seed wheel, G, conducting tube, h, and pointed seed scatterer, substantially as and for the purposes herein specified.

I also claim the double-curved lever, I, in combination with the connecting cords, or their equivalents, working around the peripheries of the curved arms thereof, substantially as and for the purpose specified.

I also claim the guide rod, H, arranged so as to be properly adjustable to the eyes of the attendant, substantially as and for the purpose herein set forth.

I also claim the construction of the graduated roller, M, substantially as and for the purpose herein specified.

48,230.—Mode of Lubricating Car Wheels.—Walter Youmons, Lansingburg, N. Y.:

I claim the employment or use in connection with a box, D, of a car wheel, of a series of holes or openings, b, in the hub, C, encompassing the box, D, and the latter provided with slots or openings, C, the holes or openings, b, being filled with cotton waste saturated with oil or other proper lubricating material, and all arranged substantially as and for the purpose herein set forth.

I further claim, in connection with the parts aforesaid, the oil receptacle, I, applied to the outer end of the hub, substantially as and for the purpose herein specified.

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48,231.—Drum Stove.—D. M. Younkman, Fremont, Ohio:

I claim the drum stove herein set forth as a new article of manufacture.

[This invention relates to the class of stoves known as drum stoves, which are heated by means of currents of hot air and of the products of combustion, and it consists in an improved arrangement of flues and other parts, whereby a more economical use is made of the heat which it is to be the medium of distributing.]

48,232.—Broom Head.—Frederick C. Bolender, Lima, Ohio, assignor to himself and Wm. F. Doggett, Indianapolis, Ind.:

I claim the arrangement of the screw stem, A B C, binder, E F G, sheath, H I, and ferrule J, or their equivalents, to form a metallic broom head, substantially as set forth.

48,233.—Grain Separator.—S. K. Ayres (assignor to himself and B. A. Wilder), Delton, Wis.:

I claim, First, The combination of the oval cam, D, spring, F, rod, E, shaft, H, arms, I I', and rods, J L, for the purpose of operating the screens, or giving a shake motion to the same, as set forth.

Second, The hanging or suspending of the shoe, N, on the adjustable bar, A, by means of a hook arm, P, and vibrating or reciprocating bar, K, as set forth.

48,234.—Door-bell or Gong.—A. G. Dexter, San Francisco, Cal., assignor to himself and Thos. Mackell, Palmyra, N. Y.:

I claim a gong for a door, the hammer of which is operated through the medium of a plate or handle at the outer side of the door, so arranged or connected with levers and the hammer shaft that the latter will be actuated and the gong sounded, by pressing said plate or handle in a direction toward the door, substantially as herein set forth.

I further claim the arrangement of the hammer shaft, J, bent lever, F, with yielding plate, M, attached, lever, B, and plate or handle, D, or its equivalent, with the springs, H L, and gong, I, substantially as and for the purpose set forth.

[This invention relates to a new and improved gong, applied to a door in such a manner as to serve as an improvement on the ordinary door-bell, it being more readily applied, less liable to get out of repair, and sufficiently sonorous to be heard all through a house.]

48,235.—Machine for Brushing Hats.—Cyprien Faure (assignor to himself and Henry J. Yates), New York City:

I claim, First, The brushes, F, and reciprocating rod, C, constructed and arranged substantially as herein described.

Second, The combination of a guide groove, G, and pin, X, or their equivalents, with the reciprocating rod, C, and brushes, F, substantially as and for the purpose set forth.

Third, The application of the joint, F, in combination with the rod, C, brushes, F, and blocks, Z, substantially as and for the purpose described.

Fourth, The adjustable rings, D, in combination with the felting blocks, Z, constructed and operating substantially as and for the purpose specified

[The object of this invention is to perform by machinery the operation of brushing felt hats, caps, etc., which usually is performed by manual labor, and requires great exertion and much time.]

48,236.—Buckle.—Chas. B. Hatfield (assignor to Eugene H. Richards), Boston, Mass.:

I claim a buckle for fastening shoes and other articles, constructed and applied substantially in the mannner herein shown and described.

[This invention relates to that class of buckles designed for fastening shoes, skate straps, etc., and it consists in forming the buckle of two separate parts, one of which is a square or other shaped frame, having suitable lips on its under side, to enable it to slide along on the strap, and secures it to the tongue; said tongue constitutes the other part, and it is attached directly to the article itself; it has a flange on the end of the side, which gradually increases in depth toward its end, over which flange the lips of the other part slide, and thus the two parts of the article are secured together.]

48,237.—Nutmeg Grater.—Joseph Lofvendahl (assignor to himself and John Bloomgrist), Boston, Mass.:

I claim, First, The hopper, a a, in combination with the springs, C, or their equivalents, constructed substantially as herein shown and described.

Second, The plunger, b, in combination with the cover, D, and hopper, a a, arranged substantially in the manner and for the purposes herein specified.

[This invention consists in arranging in a box of any desirable form, at hopper, for receiving the substance to be grated, having expanding sides, for the purpose of permitting larger or smaller articles to be thrust through them, to be subjected to the action of a revolving grater, and yet retain a hold upon such article sufficient to prevent their displacement by the grater, said grater being arranged in the interior of the box; i also consists in the employment or use in connection with such a hopper of a plunger having a spiral or other suitable spring arranged around its stem, for throwing it upward after it has been depressed, for the purpose of forcing the nutmeg or other substance upon the grater.]

48,238.—Channeled Sole.—Gordon McKay, Boston, Mass., assignor to James Purinton, Jr., Lynn, Mass.:

I claim a channeled sole, in which the channel is formed by displacement of the material by pressure, substantially as set forth.

48,239.—Water-proof Collar and Cuff.—George W. Ray (assignor to Ray & Taylor), Springfield, Mass.:

I claim a paper collar or cuff when enameled with the composition and by the process herein described.

48,240.—Stove.—Thomas Scott (assignor to Thomas Scott, Sr.), Carrollton, Ill.:

I claim, First, Protecting the interior of sheet-iron or other thin stoves, with removable cast-iron linings, constructed and applied within the stove substantially as described.

Second, I also claim the arch, B, in combination with the lining, C, substantially as above described.

[This invention relates more particularly to stoves for heating purposes, but the principle of the invention is applicable to stoves for cooking purposes. The invention consists in a novel way of combining cast-iron linings within a sheet-iron stove, whereby the walls of the latter are protected from the fire, and the heating capacity of the whole structure is increased.]

48,241.—Buckle. Dwight L. Smith (assignor to the Waterbury Buckle Company), Waterbury, Conn.:

I claim as a new article of manufacture the combination of the hinges, h h, with the ears or rests, c c, on which the broad end, d, of the lever is supported, when the whole is constructed, arranged and fitted for use, substantially as herein described and set forth.

48,242.—Door-bell.—Andrew Turnbull (assignor to P. & F. Corbin), New Britain, Conn.:

I claim the combination with the hammer lever, m, of a device, which in being moved by the outward and inward movement of the knob or handle, shall actuate the lever, m, and its hammer, and thus cause the bell to be rung during each of said movements of the knob or handle, as herein described and represented.

48,243.—Manufacture of White Lead.—Wm. Baker, Sheffield, Eng.:

I claim the substitution for acetic acid as now used in the Dutch method for the manufacture of white lead, salts of acetic acid from which acetic acid may be produced or liberated by the employment of either sulphuric acid or hydrochloric acid or mixtures thereof, or by the employment of the acid sulphates of the alkalies.

48,244.—Circular Brick-kiln.—Frederick E. Hoffman, Berlin, Prussia:

I claim the employment or use of a continuous arch, divided in a number of sections, each provided with an opening to fill and empty it, and with apertures for introducing the fuel, in combination with a movable partition, with radiating flues and smoke-stack, constructed and operating substantially as and for the purpose specified.

Also the continuous smoke chamber, in combination with the flues, dampers, smoke-stack and sectional arch, constructed and operating substantially as and for the purpose specified.

48,245.—Machine for Upsetting Wagon Tires.—Gideon Huntington, Norwichville, Canada West. Antedated June 7, 1865:

I claim, First, The self-acting keys or wedges, acting in the loops or bevelled mortises, as above described.

Second, The combination of the keys and mortises with the various parts of this machine, and for the purposes herein set forth.

48,246.—Knapsack.—Antoine Perrin, Paris, France:

I claim, First, The peculiar combination of garment and bag, in the manner and for the purposes hereinbefore described.

Second, The peculiar construction of garment, combined or not with a sack or bag, as and for the purposes hereinbefore described.

48,247.—Grate for Steam-boiler Furnace.—Johann Zeh, Vienna, Austria:

First, The combination with the transverse grate bars, r, of the rods, m and o, and their operating devices, for the purpose of imparting to the grate bars an oscillating movement independent of their supporting rods.

Second, The combination of the coal hopper, a, inclined furnace grate, b, cinder conduit, c, and ash-pit, constructed and operated as herein described.

Third, The combination with the transverse grate bars, r, of the rods, m, and their operating devices, for the purpose of imparting to the entire grate bodily a backward and forward motion, as herein specified.

48,248.—Sewing Machine.—John J. Sibley, New York City, assignor to Bruen Manufacturing Company of New York:

First, I claim the attachment described, adjustable to a Wheeler & Wilson sewing machine, to make a stitch of three or more threads, substantially in the manner set forth.

Second, I claim the combination of the attachment described, with the needle, rotating hook, bobbin and other operative parts of a Wheeler & Wilson sewing machine, except the ring slide.

Third, I claim the ring slide, j, constructed and operating substantially as described.

Fourth, I claim the combination of the needle, l, bobbin, k, thread carrier, d, and ring slide, j, constructed and operating together, substantially as described.

Fifth, I claim the step, y, constructed and operating substantially as set forth.

REISSUES.

1,989.—Distilling Hydro-carbon Oils.—William Archer (assignor to himself and William P. Downer), New York City. Patented Sept. 6, 1864:

I claim the continuous and fractional distillation and separation of hydro-carbon and other oils and volatile substances by the direct application of superheated steam or hot air to the surface of a flowing sheet, column, or shower of the substance to be distilled, in the manner described, or any modification thereof by which the same result may be accomplished.

I also claim the combination of the leading tube, b, with the deflecting and receiving discs, c and c, with the spiral or straight feeding tube, d, in the manner and for the purposes described.

1,990.—Hoisting Machine.—William G. Brower, New Brunswick, N. J. Patented May 25, 1858:

I claim, First, The combination in a machine for hoisting of a coupling, J, or its equivalent, for connecting and disconnecting the driving power to and from the windlass, with the sliding bars, K N, levers, O O, substantially as and for the purpose above described.

Second, I also claim the devices mentioned in the preceding clause of the claim, in combination with means for holding the article to be raised, substantially as and for the purpose above described.

Third, I also claim withdrawing the levers, O O, from their engagement with the shifting bar, K, by means of the hoisting rope or chain, and the cross-bar, l', and rods, g, or their equivalents, so as to connect the windlass with the driving power by means of the descent or weight of the rope or chain and its attachments, substantially as described.

1,991.—Machine for Peeling Willow.—George J. Colby, Waterbury, Vt. Patented Oct. 12, 1858:

I claim, First, The application and use of vulcanized India-rubber, or other yielding elastic substances, for rollers, to admit various sizes of oziers or willow rods, to be drawn in between, rubbed and wrung, to loosen the bank for peeling and discharge the rods, as herein specified.

Second, I claim the serrated metal roller, B, in connection with an elastic or yielding roller, B', they both having end chase, or a lateral vibrating motion, to mangle and rub rods without crushing them, for the manufacture of willow ware.

Third, I claim the rack or comb, N, for separating the loosened bark from the rods, in combination with the feed rollers, L M, and the faster speed rollers, H H', for discharging the peeled rods, as herein set forth.

1,992.—Mode of Fastening India-rubber Rolls to Metallic Shafts.—George J. Colby, Waterbury, Vt. Patented April 1, 1862:

I claim the process of forming a cement to fasten vulcanized india rubber, gutta percha, or other similar gums, to metal, woods, or other substances, by heating the surface of the gum sufficient to melt it to a sticky state, and then applying it in that state to other heated substances, and cool off, as herein specified.

1,993.—Steam Boiler. Edward N. Dickerson, New York City. Patented March 1, 1864:

I claim, First, A superheating steam boiler, constructed and operating substantially on the principles described.

Second, Combining in a boiler an evaporating apparatus so constructed and arranged as to convey the water in divided streams from one water space to another across the column of hot gases ascending from the fire, with a superheating apparatus placed above it so constructed and arranged as to convey the steam in divided streams across the same column of hot gases, in an opposite direction from that in which the water first passed, in order that it may be superheated on its passage to the engine, substantially as described.

Third, Specifically and as the best elements for constructing my new boiler, I claim the arrangement of the tubes in the evaporating apparatus which convey the water in divided streams across the current of hot gases and other tubes still farther removed from the fire through which the hot gases pass and around which the steam flows in divided streams, substantially as described.

Fourth, I claim so arranging the steam delivery aperture, leading the steam out from the surface of the water in an inclined straight water tubular boiler, in reference to the descending channel which supplies with water the lower ends of the water tubes, that the steam shall be drawn out above the descending column of water, so that the tendency of water to rise up to an aperture through which steam is being drawn, may be counteracted by the controlling tendency to descent in the sinking column of water, substantially as described; and this I claim, whether a superheating apparatus is used or not.

Fifth, I claim the perforated sheet or other equivalent device through which the products of combustion are passed from the space above the evaporating apparatus to the chimney, so constructed and arranged that the hot gases will be drawn to the chimney through the apertures extending along the length of the evaporating apparatus in divided streams so as to disperse the heat over the evaporating surface equally, by drawing it equally from the grates, and also to diminish its intensity on the superheating apparatus, substantially as described.

Sixth, I claim, in combination with a superheating apparatus inside of a boiler, and forming a part of it, straight water tubes for evaporating the water, opening at their opposite ends into ascending and descending water channels, so that the water may ascend in the channel at the higher ends of the tubes, and descend in the channel at the lower end, substantially as described.

Seventh, I claim so arranging the evaporating apparatus with reference to the water level that the highest end shall be under the entrance end of the superheating apparatus, in order to compel the steam to pass through the superheating apparatus, substantially in the manner and for the purposes set forth.

Eighth, Arranging the delivery ends of straight water tubes so that they shall open against a reflecting plate so as to neutralize the tendency of the water to jet out of the tubes and to be forced out of the boiler along with the steam when in combination with a superheating apparatus which shall receive the steam from the hot water after it has been reflected from the plate, substantially as described.

Ninth, So arranging the superheating apparatus that any water which enters it at its entrance end, may drop out of it at its delivery end, and not be carried to the engine, substantially as described.

1,994.—Turning Lathe.—Nathan Harper, Newark, N. J. Patented, Feb. 14th, 1865:

I claim, First, a rest constructed so as to move freely in a straight line at right angles with the axis of the material being turned, in combination with springs or weights, and shaping patterns, substantially as described.

Second, A rest constructed so as to move freely in a straight line at either an acute angle with the axis of the material being turned substantially as described.

Third, A compound rest when composed of the functions above described in combination with the rest having only a horizontal motion, substantially as described.

1,995.—Manufacture of Dextrine, Sugar, Etc.—Theodore A. Hoffmann, Beardstown, Ill. Patented May 25, 1858:

I claim, First, The combination of steam and acids for converting starch, corn and other cereals into dextrine, sugar and vinegar or alcohol thereof, when said grain is subjected to the action of different acids and water, and the temperature of the mash is elevated to from 235 to 350 degrees (below 350 degrees) Fahrenheit

Second, Also the use of a closed mash tub of such strength as to be able to sustain the pressure due to the temperature of 225 to 350 degrees Fahrenheit, substantially as herein described, for the purpose of mashing starch.

1,996.—Cultivator.—R. A. Leeper and Z. B. Kidder, San Jose, Ill., assignor to Dills, Kern & Co., Atlanta, Ill. Patented Feb. 12, 1861:

First, We claim suspending the share standards, I I, upon pivots or bolts at their upper ends, substantially as and for the purposes shown and described.

Second, We claim the combination and arrangement of the share standards, I I, slotted supports, j j, and beams, L L, jointed at their front ends, as and for the purposes specified.

Third, We claim the employment of the crank shaft, M, provided with the arms, s and r, arranged and operating substantially as and for the purposes specified and described.

Fourth, We claim the combination of the oscillating standards, I I, beams, L L, crank shafts, M M, provided with the arms, r s, and rods, t, arranged and operating as specified and described.

Fifth, We claim, in combination with said standards, I, beams, L, connecting bar, K, crank shaft, M r s, and rod, t, the rod, O, and lever, N, arranged and operating as and for the purposes specified and shown.

Sixth, We claim the combination and arrangement of the oscillating standards, I I, supports, j j, cross bar, k, rods, l l, and beams, m m, substantially as and for the purposes specified.

Seventh, We claim in combination with said oscillating standards, I J, uprights, j j, cross bars, k, rods, l l, and beams, m m, the employment of the fulcrum, h, upon the cross bar, g, lever, F, and rods, i i, all arranged and operating substantially as and for the purposes set forth.

Eighth, We claim the arrangement of the spindles, a a, bars, b b, and slotted plates, D D, with the frame, A, and seat, E, all arranged as and for the purposes shown and specified.

1,997.—Coat and Hat Hook.—Jas. T. and Horace A. Pratt, New York City, assignees of Geo. F. J. Colburn. Patented Nov. 1, 1864:

We claim a coat or hat hook, so constructed as to adapt it to be slidden and adjusted upon its sustaining bar, substantially as herein described.

DESIGNS.

2,083.—Photographic Card.—Augustus E. Alden, Providence, R. I.

2,084.—Statuette of Abraham Lincoln.—J. A. Bailly, Philadelphia, Pa.

2,085, 2,086.—Comb.—Elias Brown, Wappinger's Falls, N. Y. (Two cases.)

2,087.—Skirt Border.—Robert M. Bailey, Boston, Mass.

2,088.—Music Stand.—M. H. Elmore, Buffalo, N. Y.

2,089.—Trade Mark.—A. F. Goodnow, New York City, assignor to the Lamson & Goodnow Manufacturing Company.

2,090.—Plate of a Stove.—James Horton and John Martino (assignors to Stuart & Peterson), Philadelphia, Pa.

2,091.—Statuette of Shakespeare.—Edward J. Kuntze, New York City.

2,092.—Lamp Chimney.—John Letchworth, Philadelphia, Pa.

2,093.—Plate of a Stove.—John Martino (assignor to Stuart & Peterson), Philadelphia, Pa. Antedated May 30, 1865.

2,094.—Portable Stove.—John Martino and John Currie (assignors to Stuart & Peterson), Philadelphia, Pa. Antedated May 30, 1865.

2,095.—Monument.—James W. McLaughlin, Cincinnati, Ohio.

2,096.—Bust of Abraham Lincoln.—Wm. H. Philip, Brooklyn, N. Y.

2,097.—Medallion Head of Abraham Lincoln.—James Powell, Cincinnati, Ohio.

2,098.—Cook Stove.—Isaac A. Sheppard and Julius Holger, Philadelphia, Pa.

2,099.—Cook Range.—Isaac A. Sheppard, Philadelphia, Pa.

2,100.—Flange of a Stove.—Phineas Smith, New York City.

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